IRON AGE

AUGUST 23, 1951 VOL. 168, NO. 8

THE IRON AGE
Editorial, Advertising and Circulation Offices, 100 E. 42nd St., N. Y. 17, N. Y.

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Indexed in the Industrial Arts Index and the Engineering Index. Published every Thursday by the CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Western Hemisphere Countries $15; other Foreign Countries, $25 per year. Single Copies 35c. Annual Review and Metal Industry Facts Issue, $2.00. Cable address "Ironage" N. Y.

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CONTENTS

★Starred items are digested on opposite page.

EDITORIAL A Plague Among Us

NEWS OF INDUSTRY

Iron Age Introduces
Iron Age Salutes
★New Public Relations Catching One
Freedom Thrives In Canada
★Sintering Helps Ore Reserves Live Longer
★Transport Inflation Quickens
Industrial Briefs
★Are Pricing Officials Stalling?
Controls Digest & Subcontracting News
Pricing Relief for Machine Tools
More Certificates of Necessity Approved
Construction Steel News
Clearing House

NEWS ANALYSIS

Newsfront
Machine Tool Highspots
★On the Assembly Line
★West Coast Progress Report
★The Federal View

TECHNICAL ARTICLES

★Alloyed Metal Powders Replace Machined Casting
★Corrosion-Proof Cements Extend Pickling Tank Life
★How To Get The Most From Your Lathes
Porcelain Enamel On Selector Valve Cuts Maintenance
Key To Defense Production In Foreman's Hands
Ultrasonic Cleaner Cuts Cleaning Costs
Consumer Installs Slitting And Leveling Plant

MARKETS & PRICES

★The Iron Age Summary
Market Briefs and Bulletins
Nonferrous Metals Outlook
Iron and Scrap Market
Iron and Scrap Prices
Comparison of Prices
Steel Prices
Ferroalloy Prices

REGULAR DEPARTMENTS

Dear Editor
Fatigue Cracks
Dates to Remember
New Equipment
Free Publications
New Books

INDEX OF ADVERTISERS 147

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Dear Editor
Fatigue Cracks
Dates to Remember
New Equipment
Free Publications
New Books

INDEX OF ADVERTISERS 147

DIGEST

of the week in metalworking

STEEL-CUSTOMER RELATIONSHIPS RESTORED

PAGE 15 Steel circles are glad NPA has seen fit to permit them to restore their historic customer relationships under CMP. Previously CMP orders had to be booked under first come first served basis. Now mills can book orders without regard for date received 'til 15 days before lead time expires.

AUTO SHUTDOWNS STILL HANG IN BALANCE

PAGE 54 No one can be certain if production will continue without widespread auto shutdowns striking this year. The steel distribution picture is more confused today than ever before. Critical shortages have already hit. Number of pleas to automakers for steel has today reached an all-time record.

WEST COAST IRON ORE SAILS FOR JAPAN

PAGE 59 While Kaiser Steel Corp. and Geneva Steel Co. scout for additional iron ore reserves, ores of commercial value have been leaking out to Japan at prices ranging around $30 a ton, f.o.b. Japan. Some of deposits being mined for this purpose may be small but exploration may be worthwhile.

ADMINISTRATION PLANS CREEPING INFLATION

PAGE 60 The creeping inflation policy that President Truman and his staff are committed to shows its ugly head in policy decisions coming from federal economic agencies. Idea is to let inflation inch ahead as painlessly as possible. One example of the plan is the much softer policy on wage hikes.

ALLOYED METAL POWDERS PROVE SUCCESSFUL

PAGE 61 Powdered copper is pressed in dies used to form iron powder impeller blades for a waste disposer. Running the compacts through a continuous furnace together gives a density up to 97 pct with good ductility. Cyaniding gives tensile strength up to 90,000 psi, hardness up to 300 Bhn.

CORROSION-PROOF CEMENTS UP TANK LIFE

PAGE 66 Life of steel mill pickling tanks and other equipment subject to acids and alkalis extended and maintenance costs are cut where corrosion-proof cements are used. Combinations of chemical and thermal setting cements, and of impervious membranes, protect from most corrosive chemicals.

HOW TO GET THE MOST FROM ENGINE LATHES

PAGE 69 Tailstock turrets can often eliminate second operations. Bed-type turrets practically make an engine lathe into a turret lathe. Special centers, steady rests, collets, and faceplates, all contribute to increasing versatility and production of engine lathes. This is second in a series of articles.

GIVES THE FACTS FOR RIGHT ANSWERS

PAGE 85 Inland Steel Co. and Borg-Warner Corp. are making public relations history with a new non-propaganda program called "In Our Hands". It tells the story of America and is aimed at finding common ground for labor and management. It gives the facts. The right answers are clear.

SINTERING — ORE RESERVES LIVE LONGER

PAGE 87 Domestic iron ore reserves will live a little longer with the help of sintering plants which each year recover millions of tons of iron ore fines and flue dust. This capacity is now about 24 million tons in the U.S. and will grow. The sinter makes for smoother blast furnace operation.

STEEL TRUCKERS PLAN TO RAISE RATES

PAGE 88 Truckers and possibly barge lines jacking up transportation rates on the heels of higher freight rates granted to railroads may add momentum to the inflation whirl that steel producers and consumers must weather. Truckers met in Cleveland recently and put planned hikes on record.

IS OPS STALLING FOR TIME ON CONTROLS?

PAGE 90 By extending effective dates on new machinery and manufactured goods pricing orders Office of Price Stabilization faces charges of stalling for time to somehow soften congressional obstacles. But OPS men claim they are having a hard time working with the Capehart amendment.

CONTINUOUS CASTING OF O_2-FREE COPPER

NEXT WEEK Operating experience has been accumulated on the Rossi continuous casting machine in operation at Carteret since 1948. It casts rounds up to 8 in. in diam, and slabs up to 26 in. wide. Continuous casting has answered the trade's demands for heavier coils of copper which is oxygen free.

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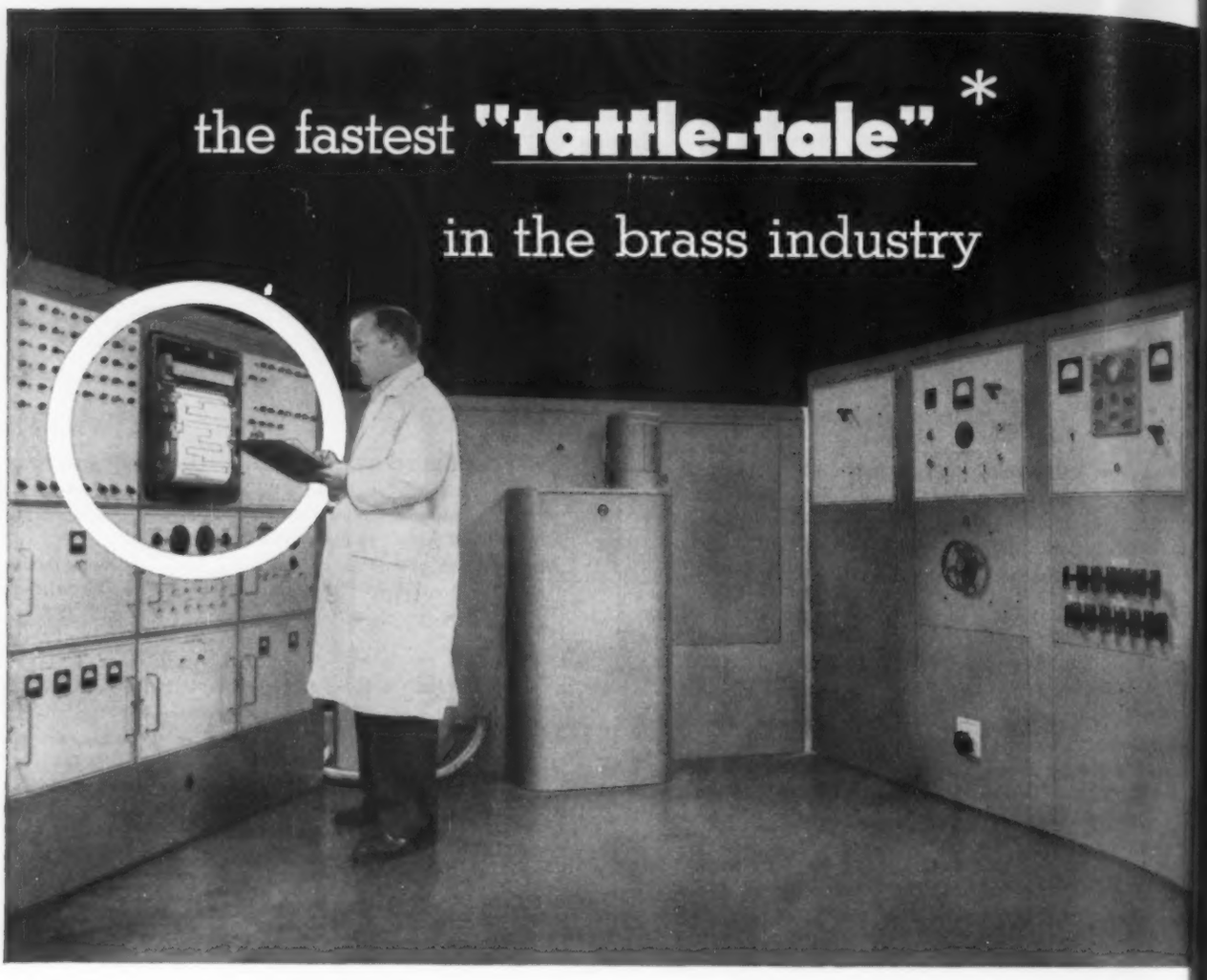
the fastest "tattle-tale" * in the brass industry



write for our new booklet:
"Control—the Key to Improvement in Quality Products"

As many as eight elements in minute quantities of only .002% can no be analyzed accurately in two minutes. That's how fast a complete analys of a brass or bronze alloy is recorded with the new Quantometer*, a direc reading spectrometer now in use at the Titan mills.

Titan was the first brass mill to adapt and install the Quantometer for th selection of raw materials and for the control of production of brass m products (rods, shapes, welding rod and wire, forgings and die castings Because of its great speed and accuracy, the Quantometer represents an ou standing achievement in metallurgical control.

This milestone in industrial development will further insure maximu benefits to our customers' processes where Titan Brass products are use

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Quality Alloys by Brass Specialists
Brass and Bronze Rods • Forgings • Die Castings • Welding Rods

IRON AGE

editorial

A Plague Among Us

USED to be we had more time than we have now. We could attack problems with comparative quiet. Today the phone rings all day at work and many times at home. That's not too bad. We have all learned to move a little faster.

Still, things have to be done yesterday. They want this and that and they want it fast. That isn't too bad either but it does raise the blood pressure of millions of people.

This happy, carefree existence we are leading now has more problems. We don't have time to think things through.

That isn't so bad either because it has always been thus. The only difference now is that there is more of it. People are in a continuous tizzy instead of getting there once in a while. After a while it seems quite normal.

To get things done these days we have to make every moment count. Short cuts are a necessity. Trivia must be banished from the office and the plant. Efficiency must be tinged with common sense. If this is not done we will all end up in the nut house sooner or later.

There is one fly in the ointment these days. It causes a severe plague that seems to be hitting every plant and office. This malady is man-made. It is based on the assumption that someone must have an audience of from 2 to 20 every time a problem comes up.

This plague has a tremendous effect on people subject to it. They become frustrated, fidgety, chew their nails, mutter under their breath, send silly notes to each other, and say yes when they mean no.

One of our friends tells us that he goes from one plague to another before he even gets a chance to get back to his desk. What is this plague? It is meetingitus. Not the honestly necessary meetings but the thousands on thousands of questionable ones being held in offices and plants all over the country every day.

There appears to be a cure but it is hard to take. First, let those who make decisions make them without an audience—unless it is absolutely necessary. Second, let others make their own decisions and rise or fall on their judgment. Maybe then we will have more time to do our regular jobs.

Tom Campbell

Editor

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How Bliss Met Revere's Tough Rolling Mill "Specs"

Smooth-surfaced non-ferrous strip to exceptionally accurate, uniform gage...quick, precise adjustment during rundowns...variable, fast rolling speed ...extreme versatility throughout...those were requirements for three new rolling mills that Revere Copper and Brass put up to Bliss.

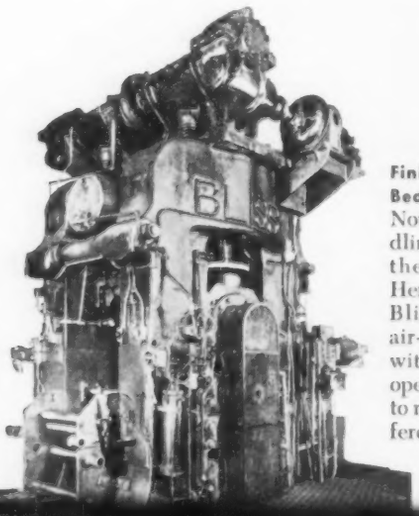
"We knew what we wanted," says H. A. Ray, Assistant Plant Engineer at Revere's New Bedford Works, "and Bliss was able to deliver. On our new intermediate rundown mill there's a collapsible block with vertical-type wrapper with an Up Coiler for heavier gage. We use the Up Coiler for strip from about .125" down to .060"—then we use the block for metal down to .016". This arrangement is compact, and I can tell you it's efficient.

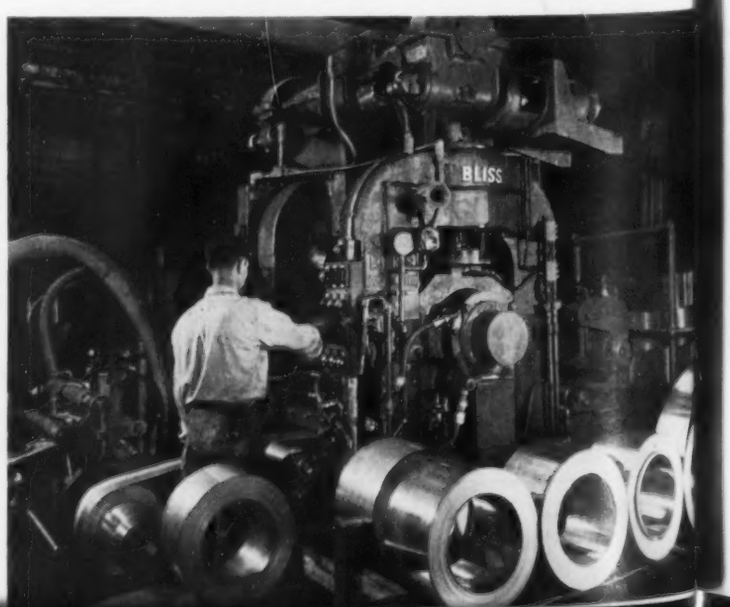
"Another thing we like is the air-operated sticker guide that Bliss developed to meet our various width requirements. On our new finishing mill, they gave us air-operated side guides immediately adjustable to handle any width we're running. On that mill, we can roll copper strip down to .005"—true to gage 24 hours a day."

Precision Rolling to "Tenths"

Down in Baltimore, at Revere's Canton Works

"Old Faithful"—This 14" and 29" x 30" 4-high mill for 1st rundown of copper and copper alloy strip has seen continuous service in Revere's New Bedford plant for over 17 years.





Finishing Mill at New Bedford Threads Up. Note the sleeve handling mechanism at the receiving end. Here, too, is another Bliss original—the air-operated sticker with adjustable air-operated side guides to rapidly handle different coil widths.

IRON AGE *newsfront*

news methods and product forecast

► First open space on steel mills for some fourth-quarter CMP tickets is January to March of 1952. One mill returned to one very good customer tickets on 37 different items ordered for the fourth quarter.

Meanwhile, fabricators of structural steel are getting wholesale rejections of CMP allotments from the mills and don't know what to do about fourth-quarter steel for jobs now in progress.

► New defense plants are having an awful time attracting key men--engineers, foremen, metallurgists, etc. One is offering new hard to get cars at marked-down prices. The discounts are bigger than those normally offered by the automobile companies to their employees. In a few cases cars have been given outright to top rated executives to lure them from their former positions.

► Prospects are that low grade chromium ores will be used in large tonnages. At least one new plant is now being built to make a special type of ferrochromium from this ore.

► A new method of classifying tool steels may soon be released. The system is a joint effort of the American Iron & Steel Institute and the Society of Automotive Engineers. A coding system has been worked out which will permit much better scrap segregation and so conserve strategic alloys.

► Part of the riddle of conversion steel will be solved by big users of this tonnage who indicate that they will go ahead with their arrangements regardless of the fact that they cost more than regular mill steel. They feel that Washington would take a dim view of people who try to shift from conversion just because they are now getting tickets under CMP.

► U. S. jet engine makers, unlike the British, have not gone in for cooling the blades. However a cooled blade turbine has just been built in this country. Details probably won't be made public until October.

► Another headache for NPA is the way steel users who had been buying from warehouses are now taking their CMP tickets to mills to take advantage of lower prices.

► Manufacturers of aluminum screening and tacks are privately burned up at the prices being charged for their products. Aluminum weighs about a third as much as copper and costs about ¾ as much in the ingot but retail prices for the same number of tacks or the same footage of screen are usually the same. Though wholesale prices are lower it will probably take some time to reflect this at retail.

► The Germans have developed a rubber conveyor belt that can run on a curve. Tractive forces are not transferred to the belt itself but to a wire rope vulcanized to its underside. It is now being used on a line of German materials handling equipment.

► Gillette of England will experimentally try applying aluminum oxide to razor blades after heat treatment and sharpening. Blades will be covered with aluminum by thermic evaporation; the coating will then be anodized. Hardness of aluminum oxide is 7.8 on the Moh scale, v. 6.5 for the steel blade.

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nothing else can do what Microcarb does!

Microcarb is a control system for the carburizing process. It *continuously* measures something that nobody has ever measured before—the active carbon in a production furnace's atmosphere *while the furnace is at work in the heat-treat department.* And it automatically, continuously controls the surface carbon content of the steel on the basis of this measurement.

Microcarb is many things to many men, especially in defense work.

To top management, Microcarb means both higher product quality and lower unit cost! Also, it means that still another manufacturing operation comes under automatic control.

To production executives, Microcarb means closer following of manufacturing schedules, because carburizing speed and results are more predictable. More predictable, that is, even than with our own pre-Microcarb processing installations. And Microcarb helps heat-treaters apply their skill—helps them earn incentive pay.

To metallurgists, Microcarb means simply better carburizing. Perhaps you saw a recent magazine advertisement headed "Thank You, Leeds & Northrup!" in which Indiana Gear Works credits Microcarb as a "big help to the gear industry" and says

> "now, for the first time, we are able to control case carbon content on carburized parts"
>
> ". . . we can produce carburized surfaces with absolute uniform control and obtain absolute maximum hardness and maximum ductility"
>
> "no more retained austenite on wearing surfaces of high nickel steels"
>
> ". . . no more carbide networks in the hypereutectoid zone"

Such results trace back to the fact that with Microcarb the carbon you "set" is the carbon you get. Just as you set a temperature controller at 1700 F, if that is the carburizing temperature you want, so you set the Microcarb Controller at 90 if you want to carburize to ninety carbon. By making the proper setting, you can either protect the surface or add carbon. Instead of controlling the amount of carbon material supplied to the process, you actually control the amount that does the work. Can you imagine controlling the temperature of a furnace by just measuring the amount of fuel it gets, without a pyrometer to tell the temperature directly? Well, that's the kind of carbon control you have always had—until Microcarb. Microcarb measures and controls carbon directly, just as a pyrometer measures and controls temperature directly.

The "reason why" for Microcarb is its carbon-detecting element. This instrument, called a Carbohm, is an engineering rarity—a truly new device for sensing a change in its surroundings. Basically, it's a wire, made of an alloy which will either absorb carbon from the furnace atmosphere, or lose it to the atmosphere, until it and the atmosphere are in equilibrium, carbon-wise. With every change in the wire's carbon content, there's a change in its electrical resistance. This resistance is measured and translated into carbon percentage by the Microcarb recorder and controller.

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IRON AGE *summary*

iron and steel industry trends

NPA permits mills to reestablish customer relationships . . . Smoother distribution expected . . . Some groups to get more steel.

NPA Recants—Marked improvement in steel distribution should result from a slight relaxing of controls by National Production Authority permitting steel companies to reestablish historic customer relationships. This had long been a sore point in the industry. Relief may have come just in time to keep the Controlled Materials Plan from tumbling down on some Washington heads.

Formerly NPA required mills to book CMP orders on a first-come-first-served basis. This not only disrupted long-standing customer relationships, it also had the frustrated customers rushing madly over the country trying to place their orders—and too often failing. This was as wasteful as it was confusing. It resulted in excessive delay and freight charges—and further taxed strained transport facilities.

Theory or Reality—Now, just when it appeared the steel industry advisory committee would blow a vocal cord from fruitless protest, NPA has relented. Mills have been notified they take or reject CMP orders regardless of date received until 15 days before lead time expires. During the final 15 days orders will be booked on first-come-first-served basis.

Steel sources were quick to term this a vital first step in untangling the CMP steel distribution snarl. But bitter experience caused them to add quickly that smoother distribution still hinges on more realistic ticket allotment for the first quarter of next year.

How Bad Is Bad?—How bad is the fourth quarter tangle? For some, it looks hopeless. One large consumer tried to place an order with his regular supplier for 37 different carbon and alloy steel items. He had fourth quarter certified CMP checks for all, although they didn't specify which steel bank.

The mill, which is known to have conscientiously applied the first-come-first-served regulation, could not furnish a single item during the fourth quarter. Item by item it listed its first open CMP schedules. Openings ranged from January through March.

The customer wasn't interested in extended booking. Since quarterly quotas aren't cumulative, he'd lose tonnage in the long run. Besides, he needs the steel in the fourth quarter.

They'll Get More — Cold-drawn bar producers are due to get more semifinished steel. A new order allows them 110 pct of shipments they received during the first 6 months of 1951 or first 9 months of 1950, whichever is larger. Most are expected to choose this year as their base because DO's added to their regular mill quotas, made their receipts larger.

Warehouses, Too — Some steel people believe NPA will also grant warehouses more steel. In Washington favorable discussion has centered on permitting them to receive 100 pct of their base period shipments. Also under discussion was the possibility of allowing them to replace their inventory each month as it is used up. This would permit them to go over the 100 pct limitation.

Still in Business—Manufacturers of consumer durables, including autos, will keep making civilian products, although they may have to cut back production still further. 'Midst assembly line gloom last week could be heard a few huzzahs at news that fourth quarter steel shipments would be allowed in about the same pattern as the third quarter. When fourth quarter tickets are issued they will be validated to reflect steel already received.

Steelmaking operations this week are scheduled at 100 pct of rated capacity.

(Nonferrous summary, p. 118)

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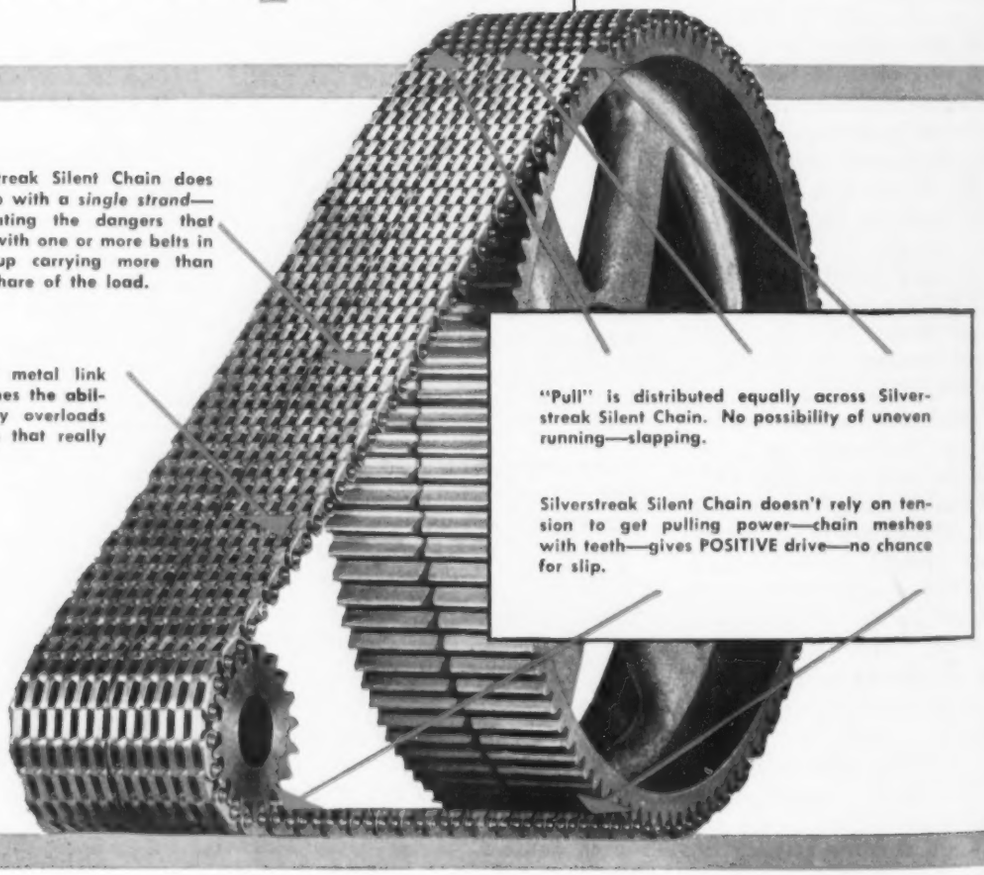

Silverstreak Silent Chain does the job with a *single strand*—eliminating the dangers that come with one or more belts in a group carrying more than their share of the load.

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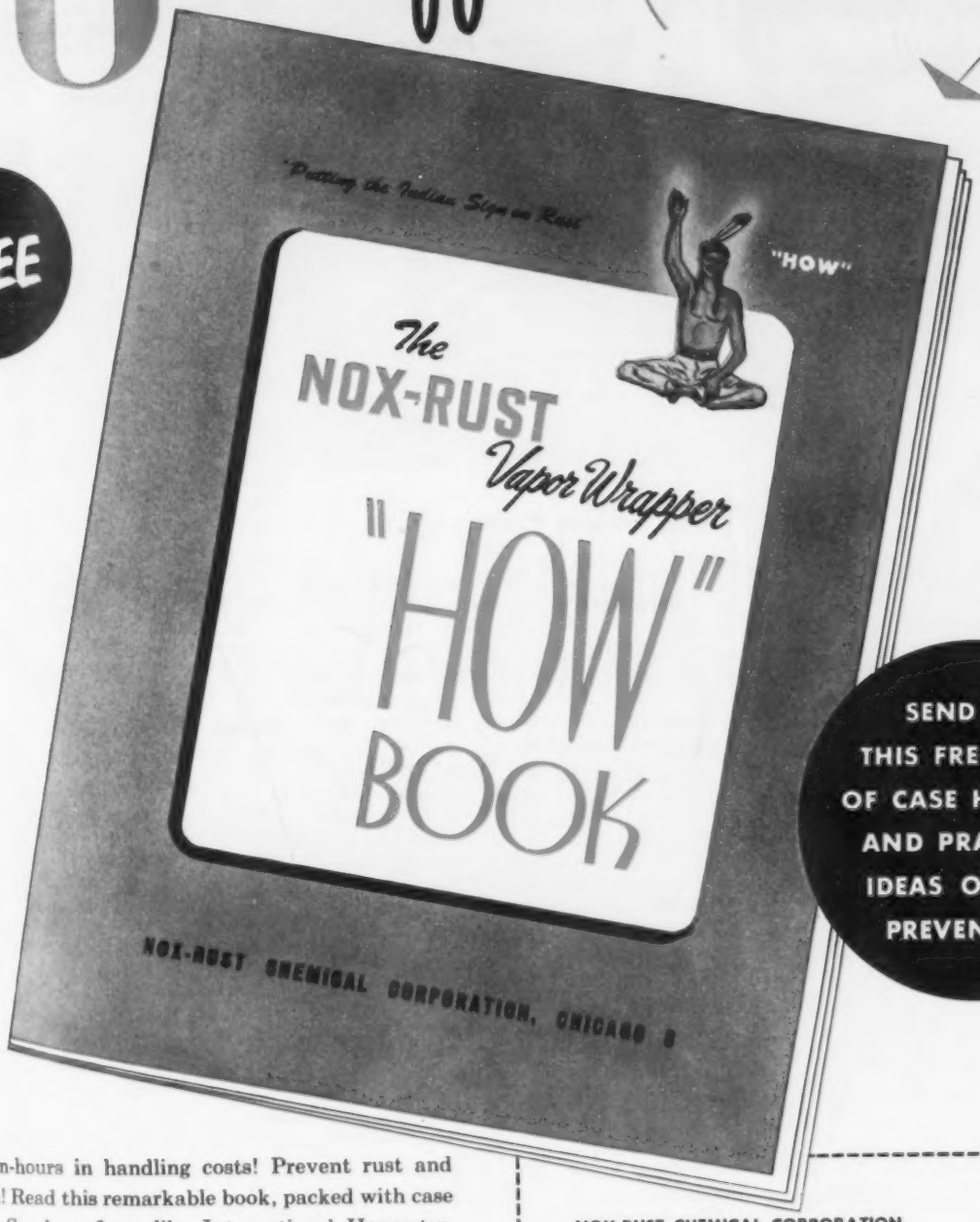

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An unusually wide variety of both simple and intricate parts can be precision made by "DIE-LESS DUPLICATING" with individual or combined application of DI-ACRO Precision Machines (see examples at right). DI-ACRO Machines are made in 6 types and 21 sizes, including a new power driven Shear and a new hydraulic Bender.

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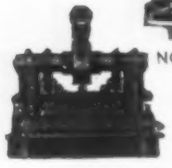
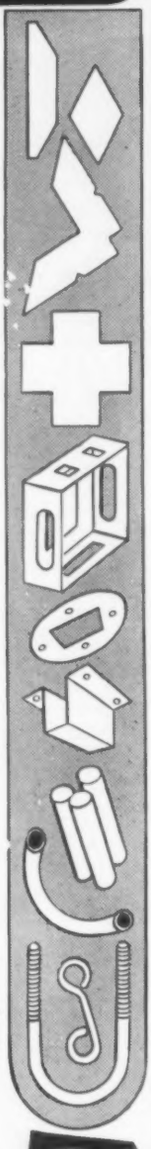


SHEARS

BRAKES



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Dear EDITOR

letters from readers

Automotive News

Sir:

We would like to reproduce the column "On The Assembly Line" by Walter G. Patton, published in your July 26 issue, to send to a few of our automobile executives.

Would appreciate your giving us permission to do this and also supplying us with pages 56 and 59 of the July 26 issue to be used in making photolith copies.

O. BAKER

Defense Co-Operation Dept.
Automobile Manufacturers Assn.
Detroit

Cold Forging Process

Sir:

At the present time when all our thoughts are turned to defense production in the many Naval Ordnance plants, from time to time it is necessary to produce material which ordinarily would require considerable planning and tooling, however, we must produce now.

We are interested in the cold forging process for manufacturing small ordnance parts, for instance socket head Allen screws, which we are required to manufacture in odd sizes and small quantities. These will not justify extensive tooling.

I would appreciate if you could republish or send me any treatise on this process you have published in the past.

Let me take this opportunity to compliment you on your fine publication. We on the production line enjoy it very much.

H. W. MORLEY
Industrial Engineer

U. S. Naval Ordnance Plant
Pocatello, Idaho

Tear sheets of our articles on the cold forging process have been sent.—Ed.

Fair Trade

Sir:

In your Aug. 9 issue, p. 20, there appeared a request from R. F. Kennedy, City Librarian, Johannesburg, South Africa, for the Mar. 25, 1943 and Nov. 7, 1946 issues of THE IRON AGE to complete their files, We are able to supply a copy of the Mar. 25, 1943 issue, which is enclosed.

Would you please ask your readers if anyone will sell or give us a copy of the Feb. 24, 1944 issue. We have been holding this volume for bindery for several years for one issue. We will trade a dozen sues someone else may want for one issue.

F. M. WEITLAU
Technical Libra

The Timken Roller Bearing Co.
Canton, Ohio

Perhaps one of our readers can help now, meanwhile, we have mailed your of the Mar. 25, 1943, issue to South Af —Ed.

Salt Bath Control

Sir:

We are interested in the article salt bath control by J. G. Morri chief metallurgist of the La Machine Co. Will you please give the dates of THE IRON AGE is which carry these articles?

W. N. HOR

Henry Disston & Sons, Inc.
Philadelphia

The articles appeared in our May 31 June 7 issues.—Ed.

Sir:

We would very much like to ob about 20 copies each of Part I Part II of "Control Salt Bath W Heat-Treating High Speed St by J. G. Morrison which was p lished in your May 31 and Jun issues.

R. N. LYNC
Sales Man

Industrial Div.
Park Chemical Co.
Detroit

Metal Stitching

Sir:

The article "Stitch It Inste which appeared in your July 19 sue is very interesting for its te nological implications. Can you gi me the name of the manufacturer this metal stitching machinery?

A. BOZI

Thomson & McKinnon
New York

The metal stitching machines are m by Acme Steel Co., 2840 Archer A Chicago 8, Ill.—Ed.

Machinability

Sir:

Would you please send me 10 t sheets of the article "Effect Of Str ture On Machinability Demo strated" by Norman Zlatin a Leonard Nowikowski which appear in your Aug. 2 issue?

G. B. CAESA

Climax Molybdenum Co.
New York

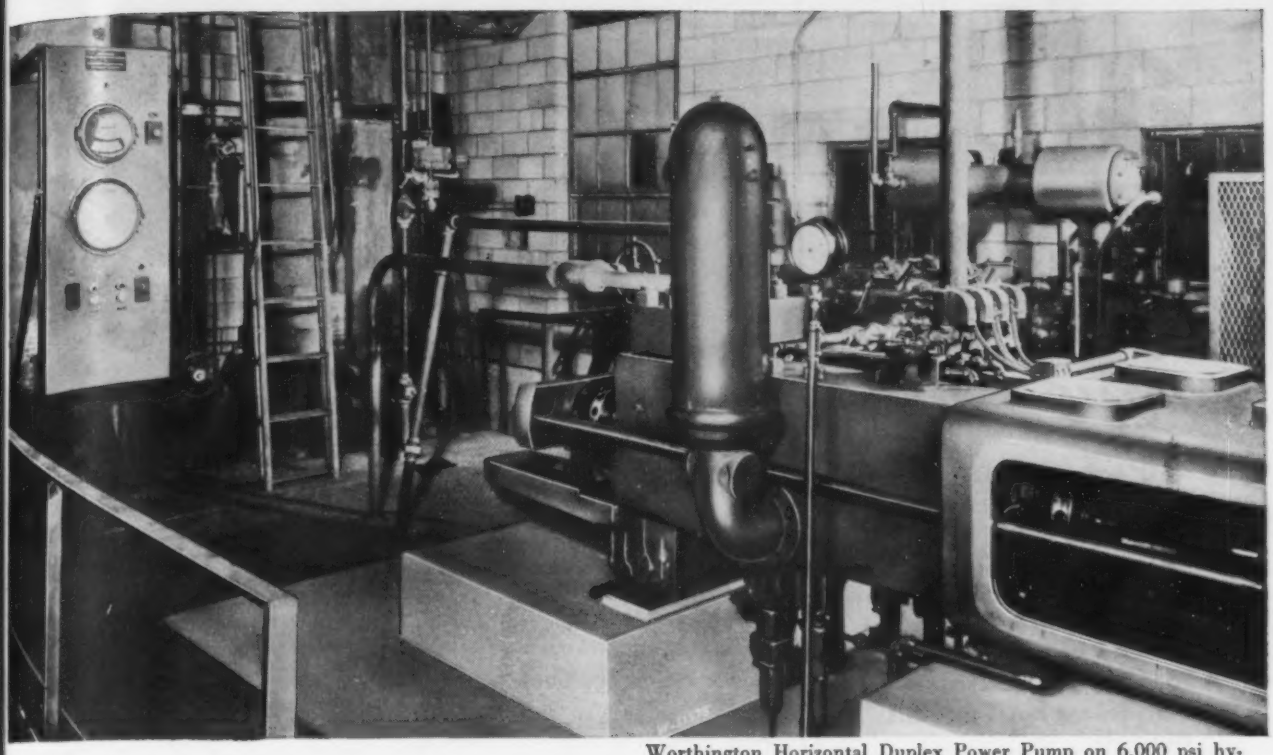
18-8 Can Be Cured

Sir:

Please send us a reprint of the ticle "18-8 Can Be Cured After In granular Attack" appearing in y Aug. 2 issue.

F. A. OTT
Mana

Polychemicals Dept.
E. I. du Pont de Nemours & Co., Inc.
Charleston, W. Va.



Worthington Horizontal Duplex Power Pump on 6,000 psi hydraulic system operating forging presses at Erie Forge Co., Erie, Pa.

Team up your Hydraulic Equipment

WITH THE ONE RIGHT PUMP FOR THE JOB

SAVE POWER, SPACE, LABOR

The pump in this picture is the "heart" of a centrally-controlled hydraulic system—powering a number of machines.

With such a system, this plant benefits from: increased overall operating efficiency and economy • concentration of hydraulic operations in a few pieces of equipment • convenient and simplified operation • use of water rather than inflammable or toxic liquid.

Complete Line—of Pumps, of Auxiliaries

The pump is a Worthington. It happens to be a horizontal duplex power pump. On another job, it might have been a high-speed vertical. Or, for larger capacity: a centrifugal pump. Or a steam pump. Or rotary. Whatever kind of pump the job calls for, Worthington *has* the right pump.

That's *one* big advantage in doing business with Worthington—the broadest range of pumps assures you the right one for each job.

Another advantage: Worthington can help you with *other* phases of the installation—for example: selection of proper design and size of high-pressure accumulaters and auxiliaries, system controls such as the Worthington suction valve unloader.

If *you* are planning a new or enlarged hydraulic system, Worthington's unequalled experience in hydraulics plus the wide range of Worthington equipment will help you *beforehand* to plan all these important factors in the installation.

For Descaling, Too

Ask us about the use of Worthington pumps on descaling of billets, sheets, plates, small parts. Descaling saves waste, saves wear on tools, reduces damage to dies in forging, improves the quality of the product.

For further information proving *there's more worth in Worthington* write to Worthington Pump and Machinery Corporation, Reciprocating Pump Division, Harrison, N. J.

WORTHINGTON

P.1.2

THE WORLD'S BROADEST LINE ASSURES YOU THE RIGHT PUMP FOR EVERY JOB

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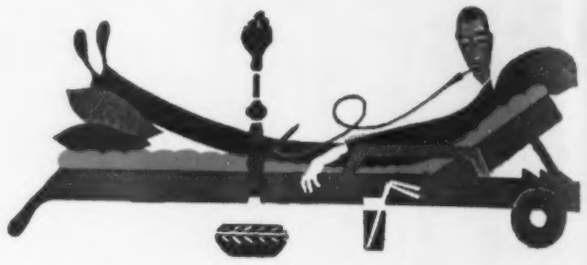
MODEL 230
2000 LB. CAPACITY

For complete details and specifications on this new MERCURY Jeep Model 230—the most versatile fork truck of 2000 lb. capacity—request your free copy of Bulletin 295.

MERCURY MANUFACTURING COMPANY
4144 S. Halsted Street, Chicago 9, Illinois

TRACTORS·TRAILERS·LIFT TRUCKS



Fatigue Cracks

by Charles T. Post

Bigger Handbags Dept.

If you think YOUR wife carries more miscellaneous material around in her handbag than any woman in the world, you might read *Belles On Their Toes*, sequel to *Cheaper By The Dozen*, best seller on Dr. Lillian Gilbreth, the time and motion study expert, and her ample family.

On p. 86, we find this passage: "Mother reached into her briefcase-sized pocketbook and pulled out two blueprints, a first draft of a speech she was writing, a copy of THE IRON AGE, a shawl she was crocheting . . . " and so on.

Around our hogan, we've always contended that the old woman carried everything in her purse *except* THE IRON AGE. Now, in Dr. Gilbreth, we find the really complete woman, and the magic ingredient which helped her reach the pinnacle both as a mother and as a professional engineer.

Machine Tool Note

Machinery Editor George Elwers reports that every time a certain machine tool builder uses a cuss word during the business day he penalizes himself by dropping a penny in a piggy bank on his desk. The controversy over what constitutes a proper pricing order for the industry so upset him that he came into the market for an oversized piggy bank.

Slam in Spades

One of our agents purloined a copy of the final operations plan for ground breaking ceremonies on Consolidated Vultee's guided missile plant at Pomona, Calif. If the plan was followed, it must have been some digging. To quote:

"Irving will be handed the spade as he steps from the platform. When group is in postion, he will hand spade to Schoeffel to dig first. Schoeffel will hand to Hall. Hall will hand to Odlum. Odlum will hand to Cohu. Cohu to Fontaine. Fontaine to Irving. Irving to Orsborn. Orsborn will hand back to Irving who will have Schoeffel sign with grease pencil. . . . Band will resume playing as official guests move into barbecue area directly behind speakers' platform."

And the spectators, catching on, no doubt broke into a spirited game of "button, button, who's got the button."

Puzzlers

If you had trouble with last week's puzzler perhaps you forgot that on the last jump the frogs were out and didn't fall back. The big frog "C" was the first out, followed by "B" and "A" with "D" bringing up the rear.

R. J. Hanna, Metro Smelting Co., D. A. Stock, Detroit and R. W. Huff, Canton, Ohio have taken us to task for the simplicity of the bottle and cork problem. They also feel that we were too conservative in giving only one answer to the number problem. E. E. Woelfle, Canada, L. Schechtman, Handy Button Machine Co. and F. H. Overdorf, Bethlehem, agreed with them.

Here is a multiple answer problem with a new twist provided by Mr. Schechtman. He has 21 coins which total $1.00. The question is how many different combinations could he have. The one with the highest number is the winner.

machine tool high spots

sales inquiries and production

by George Elwers

Not Funny—OPS boss DiSalle has quite a reputation around Washington for his humorous remarks, which reminds machine tool builders of the old homily about card games: "The winners tell jokes, while the losers cry 'Deal the cards.'"

DiSalle finally unfroze the deck this week. In his ears was the judgment of Defense Mobilizer Wilson that machine tool output take a spurt ahead. Fresh out of OPS is Revision 1 to Supplementary Reg. 2 under Ceiling Price Reg. 30. Despite its forbidding title the regulation permits manufacturers to include in 12 pct higher base period prices many labor and material cost increases between the end of their base period and Sept. 10, 1951.

Mickey Wearing Off—The revised order retains authority to raise costs extra which stem from greater use of overtime and shift premium hours. Subcontracting considerations are also made. (See p. 89.)

Machine tool output may be stirring out of its funk. The effects of the Washington mickey so fond hopes of greatly increased subcontracting seem to be wearing away.

An Old Spectre — Meanwhile, another worry, which had grown dim though it never completely faded, is back: materials shortages. Many, in fact nearly all, machine tool builders are having trouble getting suppliers to accept orders for their fourth quarter CMP allotments. Most builders were making out all right under CMP, but the fourth quarter looks desperate.

There is much evidence that Washington planners, though finally brought around to admitting that there are individual hardship cases in the machine tool industry, still refuse to grant blanket assistance to all.

Loophole for Stalling—A good example is the method, announced last week, by which machine tool builders can obtain tools for their own shops. A glowingly optimistic news release, issued almost 2 weeks ago, implied that soon all worries on this score would be ended. This gave rise to hopes that the industry's plea for a super priority was to be granted.

Instead, NPA merely instructs any builder hard up for a given machine to tell his troubles to NPA, sending all data on the need for, and unavailability of, the machine. NPA will study each request, and if it feels it is justified, order a machine diverted to the builder. Thus each case is to be treated individually. Industry officials fear agonizing delays while NPA gets around to studies, and acts on each request.

Shipment Scoreboard — Census Bureau figures show that 395 companies shipped machine tools valued at $303 million during 1950, an increase of 25 pct over 1949. Lathes, $79 million worth, topped the list. Next came grinding and polishing machines, $61 million, and milling machines, $36 million. Together these three types represented 58 pct of the total.

Over 85 pct of the total value of machine tools shipped was manufactured in New England and the East North Central states. Ohio ranked first, with 31 pct of the nation's total. Together, Ohio, Indiana, Illinois, Michigan, and Wisconsin accounted for 60 pct of all machine tools built.

Not So Choosey—Allis-Chalmers reports it is easing procurement of $12 million in machine tools for its jet engine compressor plant considerably by buying standard tools wherever production requirements permit, rather than insisting, as so many short-sighted firms do, on special equipment. About 15 pct of the tools for this plant, A-C says, will be drawn from the Air Force pool.

Seek Cure—Pricing problems of precision mechanical springs, automatic machines, and metal stampings industries are being studied by a new inter-industry committee in an effort to remove inequities imposed by Ceiling Price Reg. 30.

The study group consists of four members each from three affected industries. Goal is a specially tailored regulation.

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THE basic function of a bearing metal is to maintain a low coefficient of friction between the stationary bearing and the part which revolves or slides upon it. Lead, hardened and strengthened with small amounts of tin, antimony and arsenic, is a standard material of construction for many types of bearings and the largest single consumer of lead for this purpose is our vast railroad system. Since our nation's economy demands free interchange of railroad rolling stock, parts for all cars must be freely interchangeable; they must provide dependable all-weather performance with simple maintenance and minimum stand-by inventories.

The standard AAR solid bearing assembly, containing about 65 lbs. of lead, more than meets these requirements. Though on any given day only about 40% of the approximately 2,000,000 freight cars operated by our railroads may be found on the owner's lines, the more than 16,000,000 solid bearings installed in the cars maintain a daily operating efficiency of better than 99.99%. Few bearing installations of any type in any industry can match that record.

SOME ADVANTAGEOUS PROPERTIES OF LEAD-BASE BEARING METALS

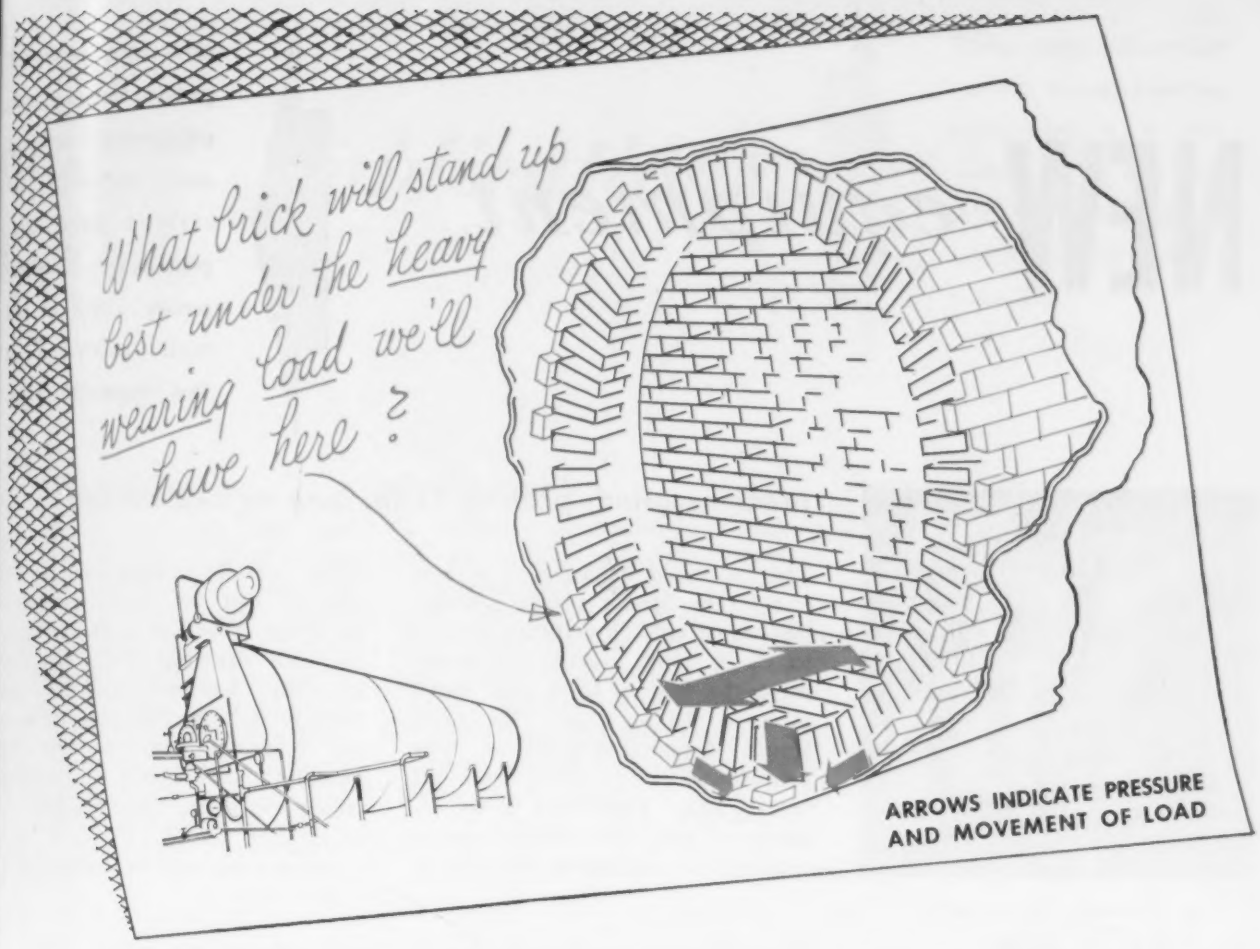
High Resistance to Compression: *Sufficient strength and toughness to withstand heavy loads without squeezing, fracture or distortion.*

Softness: *Instead of the rotating member, the bearing itself — relatively inexpensive and easily replaced — will wear rather than the more costly and hard-to-replace axle or shaft.*

Low Melting Point: *They are easily cast and readily bond to the bearing shell. When a bearing becomes too worn for further use, the lead alloy lining is readily melted out, salvaged and the bearing relined.*

Plasticity: *Foreign particles which would normally score the shaft are absorbed. Should the bearing itself become badly scored, it may be turned down and used again. Lead-base bearing metals conform and adjust automatically to slight irregularities in the machining and alignment of the shaft.*

ST. JOSEPH LEAD COMPANY
250 PARK AVENUE *ELdorado 5-3200* NEW YORK 17
THE LARGEST PRODUCER OF LEAD IN THE UNITED STATES

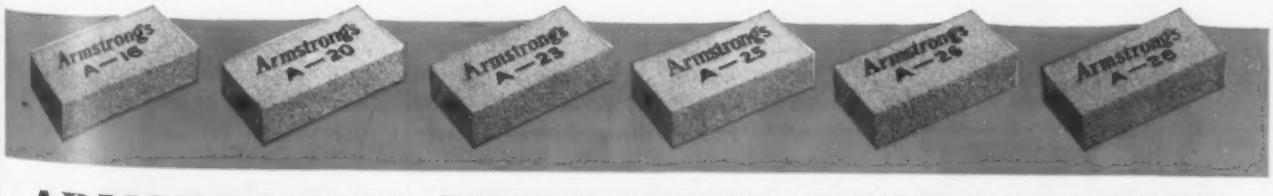


Which insulating fire brick would you use?

There are times when mechanical considerations outweigh thermal requirements when you're choosing an insulating fire brick. Take this cylindrical sulphur burning furnace, for example. Here, while the top temperature limit of the brick had to be considered, the big need was for a *strong* brick.

Brick strength was an important consideration because tons of heavy fire brick—both lining courses and checkers—bear down on the outer course of insulating fire brick. As this mass expands with heat, it moves lengthwise and laterally. This severe wearing action could quickly crumble the insulating layer. However, engineers found that Armstrong's A-23 Insulating Fire Brick, due to their extra strength, successfully withstand the destructive force in this type of installation.

Before you go ahead with your next furnace design, why not check the specifications with an engineer in a near-by Armstrong office. He may be able to put his finger on a possible trouble spot in the design—and recommend a change that will improve the performance of your unit. Contact him in the Armstrong office nearest you or write directly to Armstrong Cork Company, 4908 Mulberry Street, Lancaster, Pa.



ARMSTRONG'S INSULATING REFRACTORIES

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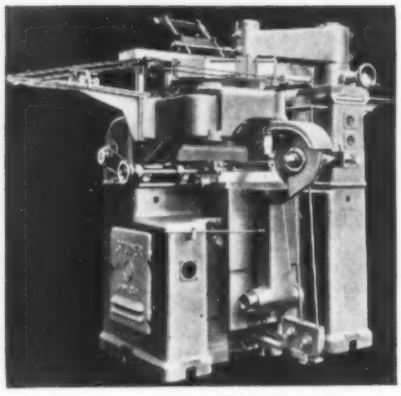
NEW *equipment*

new and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on the opposite page.



Machine grinds profiles 12 in. long on one setting

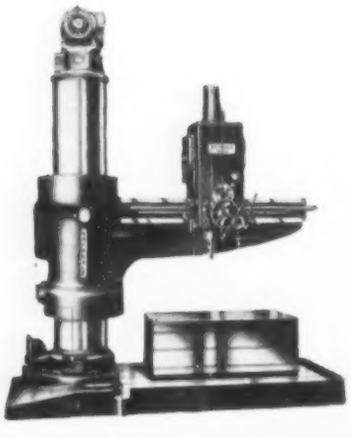
The increased capacity of a new and larger Studer profile grinder, besides permitting grinding profiles to 12 in. long, accepts flat workpieces to 4⅜ in. thick and round pieces to 10 in. diam. Maximum length of template is 24 in. The pantograph is adjustable from 1:1 to 1:10 ratio. Depending on the accuracy of templates, profiles can be ground to a tolerance of ±0.0002 in. With suitable attachments the grinder can be used for relief-grinding of the profiles of punching and drawing dies; and, for grinding clearance angles of flat form tools from the template without distorting the profiles. An automatic attachment for guiding tracer along the template is available. *Cosa Corp.*

For more data insert No. 1 on postcard.

Continuous conveyer-feeder for processing operations

This new feeder unit provides a mechanized method of handling small forgings, castings, stampings and machined parts during heat-treating, sand-blasting, washing, cleaning and other processing operations in which mass feeding and handling are necessary. Units are custom fabricated from mass-produced component parts to meet individual requirements of size and capacity. Shown is a 16-ft high double row conveyer that utilizes two 6-in. wide hinged steel belts. Intended for recessing into the floor a full 68 in., this unit can also be used as hopper storage bin prior to final discharge of parts for processing. The steel belt conveyer, guaranteed against jamming and bridging, has a variable speed drive that provides for the regulation of parts flow from one processing stage to another. *May-Fran Engineering, Inc.*

For more data insert No. 2 on postcard.



Preselect speed radial drills 3 in. diam in mild steel

Built in sizes from 4 to 7 ft spindle radius, new radial drilling machines permit preselection of speeds at any time with the spindle running or stationary. The ratio of spindle speed is 100:1; total number of speeds is 16, ranging from 15 to 1500 rpm; 6 feeds 24 to 400 rpi. For drilling holes to any predetermined depth within the full length of 15-in. spindle traverse, a graduated index dial with automatic trip is provided. Arm of the machine revolves around the column on annular roller bearings, and is elevated or lowered by an independent motor at the head of the column, controlled by a switch lever on the saddle. Controls are simple and conveniently located on the bottom portion of the saddle. Every precaution is taken to safeguard the machine against careless handling. *James Archdale & Co., Ltd.*

For more data insert No. 3 on postcard.

Turn to Page 36

FREE *publications*

These publications describe money-saving equipment and services... they are free with no obligation... just fill in and mail the postcard.

Industrial furnaces

Furnaces for railway use are described in Section One of an extensive catalog covering industrial furnaces and equipment. Small and large furnaces to cover a variety of heat treating operations are depicted and described. A cross-sectional drawing for a typical layout of a light alloy sheet normalizing plant is included. *The Incandescent Heat Co., Ltd.*

For free copy insert No. 23 on postcard.

Heavy machine tools

The problem of building heavy machinery capable of meeting the special problems of railway car builders led to development of a special line of heavy-duty machine tools. These are described in a recent 16-p. booklet. Facing lathes are built with face diam to 9 ft in the standard line, and to 15 ft in special cases. A full line of machine tools is available, all on a similar scale. *Maschinenfabrik Deutschland.*

For free copy insert No. 24 on postcard.

Contact

The key to continued successful operation of the myraid electronic devices which with we surround ourselves is the contact point. Failure here means failure of the entire mechanism. Development of metals, manufacturing methods and products to fill this need is described in a new 28-p. booklet. Fansteel's production of metals vital in electrical equipment, of selenium rectifiers, and of Tantung are described. *Fansteel Metallurgical Corp.*

For free copy insert No. 25 on postcard.

Rolling mills

A profusely illustrated 54-p. booklet on rolling mills and accessory equipment has recently been made available. Basic mill machinery is described and pictured. Hot and coldrolling equipment for both ferrous and nonferrous production is presented. Included also are a valuable series of engineering tables. *E. W. Bliss Co.*

For free copy insert No. 26 on postcard.

Refractories

Blast furnace brick capable of meeting the rugged requirements of present-day furnace operations are described in a recent 12-p. brochure. KX-99 embodies strength, toughness, high burning temperature, high slag resistance, and uniform size and shape. *A. P. Green Fire Brick Co.*

For free copy insert No. 27 on postcard.

Turn to Page 113

use postcard below

Postcard valid for 8 weeks only. Information may be secured subsequently by separate letters fully describing each item wanted, including company name.

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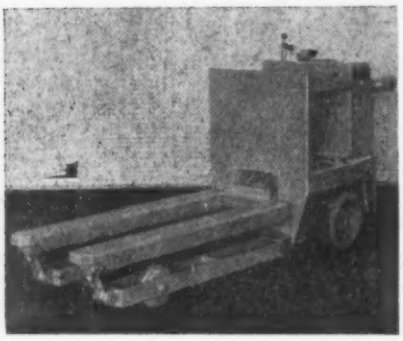
new equipment

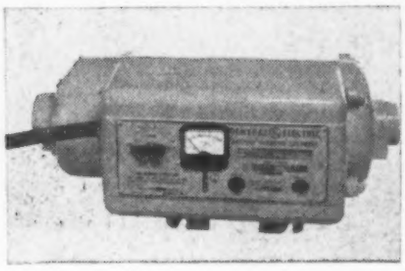
Continued



Divided platform transports wheeled containers

The platform of a low-lift power truck is built in two sections permitting part of a load to be suspended between them. The forward trail axle is divided, with each of two trail wheels having a separate axle mounted in its individual frame. Platforms are joined at the rear ends in a rigid structure, enabling them to be lowered or raised simultaneously as a unit. Forwa ends are connected to the wh frames by forged steel links a the platforms retract as they a raised. Platforms are 6¾ in. wi placed 14 in. apart. The truck a is used as an ordinary platfor truck in handling skids and t boxes. *Elwell Parker Electric C*

For more data insert No. 4 on postcard.



Battery charger designed for shelf mounting

For charging batteries in driver-lead and small driver-ride industrial lift trucks, a motor-generator type battery charger permits mounting on balconies or shelves to save vital floor space. The unit accommodates lead-acid batteries of 6 to 19 cells and nickel-iron-alk line batteries of 10 to 30 cells. T charger is fully automatic and ea to operate, weighs only 190 l Voltage and current are adjustabl *General Electric Co.*

For more data insert No. 5 on postcard.

Super size toggle clamp

A large push type toggle clamp especially suited for use in produ tion of large defense items such a planes, tanks, armored trucks, et It has a 1-in. diam plunger with 2½-in. stroke; ultimate load 10 000 lb. Constructed of solid ba stock, these clamps are said t stand heavy duty operation an provide long, efficient service. *Wo verine Tool Co.*

For more data insert No. 6 on postcard.

Leather double V belting

Leather link construction doubl faced V belting is said to provid greater efficiency on small pulle short center drives. Each link con sists of two fiber sections face with oak tanned leather. Steel con nectors insure great flexibility an eliminate stretch. Leather segment are V-faced to provide a double bevel that conforms to standar V-belt sheaves. The double V fea ture permits the belt to be turne over for double use, on straigh drives. *Graton & Knight Co.*

For more data insert No. 7 on postcard.

Turn to Page 38

use postcard below

Postcard valid for 8 weeks only. Information may be secured subsequently by separate letters fully describing each item wanted, including company name.

Postcard valid 8 weeks only. See above.

8/23/51

Name .....

Title .....

Company .....

Co. Address .....

.....

THE IRON AGE, New York 17

Fill in above the number of the item on which you need further data.

Postcard valid 8 weeks only. See above.

8/23/51

Name .....

Title .....

Company .....

Co. Address .....

.....

THE IRON AGE, New York 17

Fill in above the number of the item on which you need further data.

Postcard valid 8 weeks only. See above.

8/23/51

Name .....

Title .....

Company .....

Co. Address .....

.....

THE IRON AGE, New York 17

Fill in above the number of the item on which you need further data.

Postcard valid 8 weeks only. See above.

8/23/51

Name .....

Title .....

Company .....

Co. Address .....

.....

THE IRON AGE, New York 17

Fill in above the number of the item on which you need further data.

FIRST CLASS
PERMIT No. 36
(Sec. 34.9 P.L.&R.)
New York, N. Y.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE

100 E. 42nd St.

NEW YORK 17, N. Y.

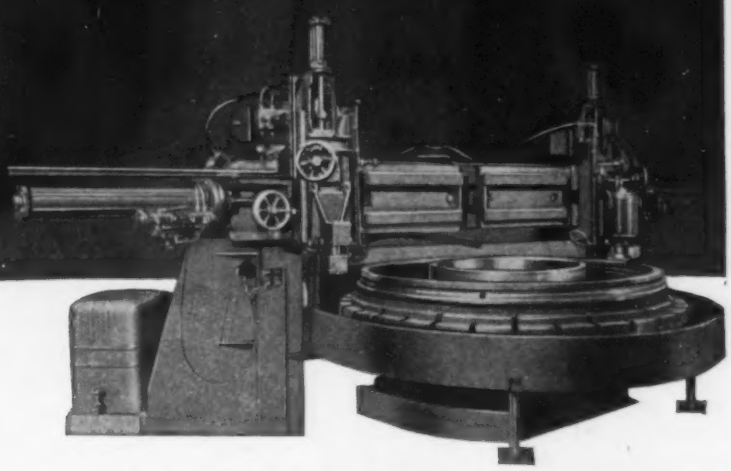
Contact KAYDON of Muskegon

FOR ALL TYPES OF BALL AND ROLLER BEARINGS 4" BORE TO 120" OUTSIDE DIAMETER

BIG PRECISION GRINDER

...calls for Big Precision Bearings

... and KAYDON *answers* "O.K."



KAYDON Double Row Taper Roller Bearing, 34.000" x 42.250" x 7.375", permits smooth, precision operation of the table spindle on the big 120" capacity double-head, heavy-duty super precision grinder shown at right.

THIS double head grinder permitted production of super precision accuracy in Naval gun mounts. It was designed to produce work of an angular accuracy of less than one-half thousandth (.0005") in 72", in flatness, squareness, concentricity, roundness and taper, and permitted interchangeability of gun mount parts which formerly were tediously hand scraped. Parts produced in regular production to an accuracy of .0002".

We believe this to be the world's largest, super precision industrial grinder, 26 of which were manufactured.

In heavy oil field machinery, ponderous steel-mill equipment, complicated paper-mill units... in rugged road-building machines, excavators, hoists, crushers ... powerful bending machines, production units, and other industrial equipment . . . KAYDON bearings are improving performance and lengthening service-life. Look to KAYDON, Standard or Special, for the better bearing service your equipment deserves.

* * * *

Counsel in confidence with KAYDON. Capacity now available for all sizes and types of KAYDON bearings . . . and for atmospheric controlled heat treating, precision heat treating, salt-bath and sub-zero conditioning and treatment, microscopy, physical testing and metallurgical laboratory services.

KAYDON Types of Standard and Special Bearings:
Spherical Roller • Taper Roller • Ball Radial • Ball Thrust
• Roller Radial • Roller Thrust • Bi-Angular Bearings

THE KAYDON ENGINEERING CORP.

MUSKEGON • MICHIGAN

PRECISION BALL AND ROLLER BEARINGS

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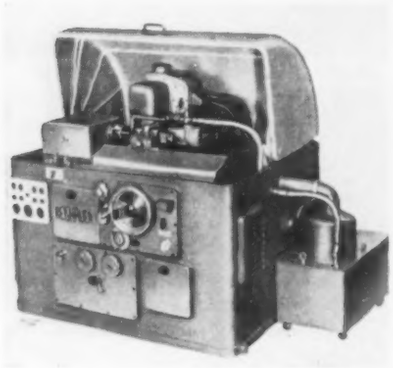
new equipment

Continued



Swiss automatic grinds very small and medium threads

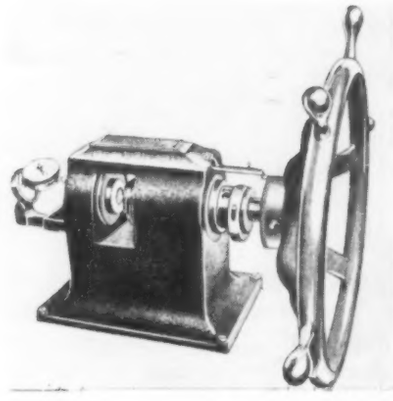
The Reishauer type RAG automatic thread grinding machine operates on the longitudinal feed principle, employing a single thread grinding wheel. This method provides maximum accuracy for grinding small pitches. Down time is limited to changing the workpiece. The grinding wheel is trued automatically during the return stroke of the work table. Measuring time is eliminated as the machine grinds to size. Only the wear of the truing diamond must be checked from time to time and adjusted by hand. The grinding slide carrying the grinding head, performs the movement for the feed and relief grinding. The head can be set in the helix angle. *Cone Corp.*

For more data insert No. 8 on postcard, p. 35.

Measuring tension, weight, tractive loads remotely

The improved Dillon Tens-O-Trol System is electro-mechanical in design and is now equipped with oversize selsyn motors for added torque and increased dependability. To a standard traction dynamometer has been mounted a ball bearing type selsyn motor. This is connected by a cable to a repeater motor housed in a metal cabinet. An external 12 v battery supplies the necessary current. When a switch is thrown on the front of the cabinet, the system becomes operative. Loads imposed on the dynamometer transmitter are instantly read on the repeater station at distances up to 400 ft away. Twelve different capacities range from 0-500 to 0-50,000 lb. *W. C. Dillon & Co., Inc.*

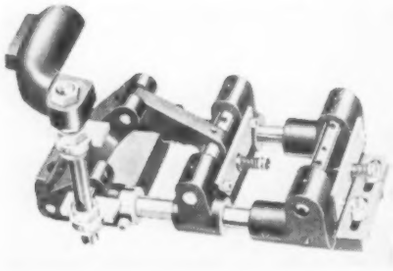
For more data insert No. 9 on postcard, p. 35.



Tester determines workability of metal sheets, strip

Alexander's sheet metal tester for making the Erichsen test determines the actual workability of ferrous, nonferrous and fine metal sheets and strips to the point of fracture. The tester will handle material to 5/64 in. thick. When testing, the operator observes the image of the test piece in a mirror, and when fracture appears, the depth of the impression is read directly from a micrometer scale. Readings can be obtained accurately to 0.0004 in. Depth of impression required to obtain fracture represents standard value which is the basis of workability of metal sheets for manufacturing purposes. Pieces 3½ in. sq, strip 2 7/16 in. wide can be tested. *J. Arthur Deakin & Son.*

For more data insert No. 10 on postcard, p. 35.



Automatic feed for stamping presses saves time

Any ordinary press can use the Surefeed, a new positive action automatic feed. It is simple in design, rugged in construction, easy to mount and quickly set up for required feed length. It is mounted directly on the die set—no press attachments or alterations are required. Stock up to 2 in. wide x 0.045 in. thick can readily be advanced by the feed through movement of the press. *Producto Machine Co.*

For more data insert No. 11 on postcard, p. 35.

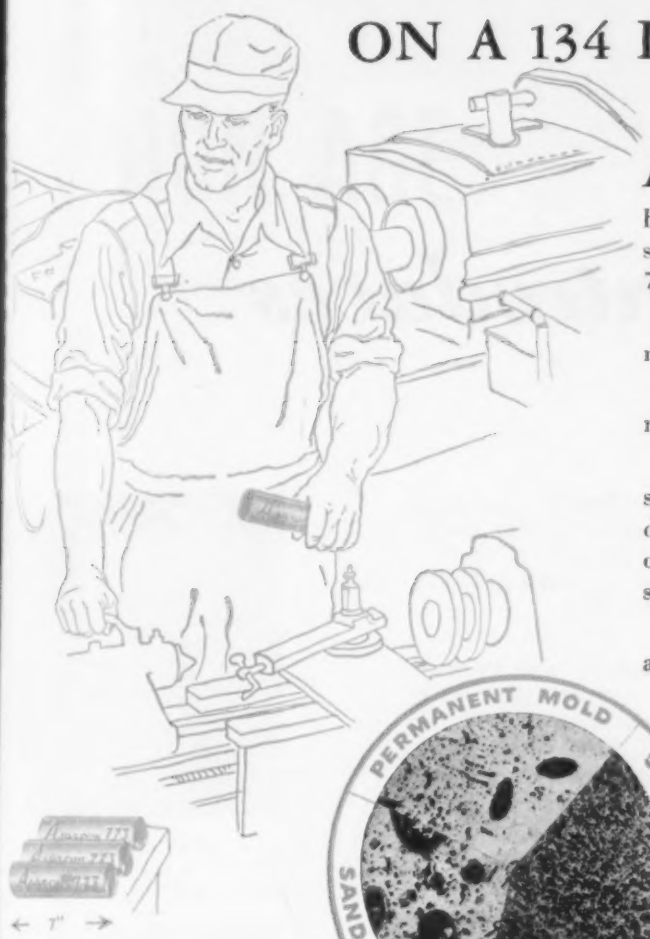
Corrugated roof deck easily handled by one man

Developed for use on industrial buildings, Granco steel roof deck sheets cover 35 sq ft each, decreasing the total number of side laps required for a job and saving erection labor. The rotary corrugator method used in its manufacture is said to insure a high degree of pattern uniformity. Granco roof deck is available in lengths up to 14 ft 4 in. *Granco Steel Products Co.*

For more data insert No. 12 on postcard, p. 35.

Turn to Page 106

60 LBS. OF BRONZE BAR STOCK SAVED ON A 134 LB. JOB!



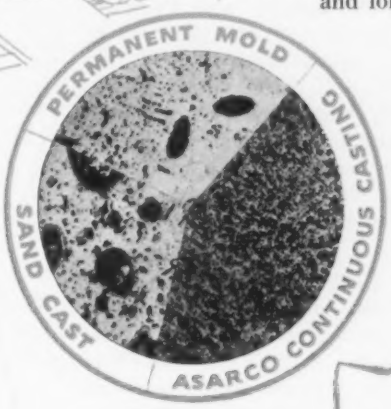
A shop needed ten 7″ lengths of 2″ solid bronze rod . . . 134 lbs. of bronze if bought in standard 13″ lengths. BUT, by specifying Asarcon 773 rod (SAE 660), the shop was able to purchase exactly the length it needed . . . 70″ plus 2″ for saw-cuts . . . weighing only 74 lbs.

The saving was 60 lbs. . . . over 44%! This is commonplace in shops which use continuous cast bronze.

With Asarcon 773 you pay only for the material you need. There are no rejects.

216 sizes of Asarcon 773 Continuous Cast Bronze are stocked in 105″ lengths . . . tubular or solid round in diameters from ½″ to 5″ . . . at distributors in all principal cities. This warehouse stock will be cut *long or short* to suit your requirements.

Symmetrically shaped bars and tubes, special alloys and longer lengths can be made to order.



POROSITY VIRTUALLY ELIMINATED WITH CONTINUOUS CAST BRONZES

These photomicrographs demonstrate the superior dispersion of constituents in continuous cast alloys . . . also their outstanding freedom from metal faults. (The particular alloy shown here is 75% Cu, 5% Sn, 20% Pb)

Send for this free catalog on Asarco Continuous Cast Bronzes. It contains physical properties, table of stock shapes and sizes, photomicrographs, weights, and other valuable information.

5-SECOND STORY ON JOB QUOTATIONS

Sam quoted on eight 5″ bronze bearings. He figured on using four 13″ bars, with scrap loss about 12″.

Joe figured on using one 42″ length of Asarcon 773 bronze...just the length he needed...almost no scrap.

P.S. JOE GOT THE JOB!

ASARCO CONTINUOUS-CAST RODS · TUBES · SHAPES ®

West Coast Sales Agent:
KINGWELL BROS. LTD., 444 Natoma Street, San Francisco, Calif.

American Smelting and Refining Company

OFFICES: Perth Amboy Plant, Barber, New Jersey
Whiting, Indiana

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IRON AGE *introduces*

A. R. McInnes, appointed middle western regional manager of the RIGIDIZED METALS CORP., and will be located in Chicago.

John H. Gorsuch, appointed manager, personnel development commercial department, U. S. STEEL CO., New York. **Linwood L. Adams** was appointed manager, transportation planning, and **T. Lester Fossick, Jr.,** manager, traffic planning.

R. Gordon Davis, appointed office manager, Pittsburgh district for U. S. STEEL SUPPLY CO.

Rudolph Illing, named assistant traffic manager of COLUMBIA STEEL CO., San Francisco.

A. Leo West and **David D. Wallace,** appointed assistant treasurers of CLEARING MACHINE CORP., Chicago.

Dr. John T. Burwell, Jr., appointed assistant to the director of research of HORIZONS, INC., Princeton, N. J.

John W. Fisher, named vice-president in charge of the metal closure and zinc rolling mill operations of BALL BROS. CO., INC., Muncie, Ind.

Arthur R. Hines, appointed assistant manager of marketing for the GENERAL ELECTRIC CO., and will be located in the New York office of the company. **Edmund C. Schorr** was appointed manager of sales, specialty transformer and ballast department at Fort Wayne, Ind. **Willard A. Kitts, III,** appointed manager of Ordnance engineering for Aircraft, Federal and Marine divisions.

John P. Wright, appointed factory manager, durable goods for the LIQUID CARBONIC CORP., Chicago.

Edward M. Epstein, appointed manager of a newly created quality control section, Nylon Div., of E. I. DU PONT DE NEMOURS & CO., INC., Wilmington, Del.

Harold B. Ridgley and **Paris F. Young,** promoted to the positions of assistant superintendents of TEXAS ENGINEERING & MFG. CO., INC., Dallas. Mr. Ridgley will be in charge of all tool manufacturing and tool engineering and Mr. Young will assist in the machine shop and spar milling and finishing.

A. D. Griffin, appointed engineer and representative, San Francisco district; and **Conrad Seim** in the South Pacific district for KENNAMETAL INC. **Frank Hull** has joined the Central District office in Detroit as a serviceman.

J. S. Mourer, appointed manager of the Pittsburgh office of the LANDIS TOOL CO.

Raymond H. Armour, appointed operating priorities representative in the AMERICAN STEEL & WIRE CO.'s production planning department in Cleveland.

E. D. Giberson, elected chairman of the executive committee of E. D. GIBERSON & CO., INC., Maspeth, N. Y. Other officers elected: **Joseph J. Lipari,** vice-president and **Morris S. Van Leuven,** assistant secretary. **Wilfrid J. Miller,** named sales manager.

Thomas G. McNamara, appointed chief metallurgist of ALLOY ENGINEERING & CASTING CO., Champaign, Ill.

Turn to page 52

V. H. FERGUSON, elected president of the newly formed Ferguson Equipment Corp., Pittsburgh.

WILLIAM ADDISON WALKER, elected president of the E. D. Giberson & Co., Inc., Maspeth, N. Y.

WALTER W. EDENS, appointed defense projects executive for Alloy Engineering & Casting Co., Champaign, Ill.

IRON AGE

salutes

Edwin Hodge, Jr.

FOLKS around Pittsburgh suspect Ed Hodge must be twins. They say it's impossible for one man to do all the things Ed does. Ed's the kind of person who cant turn his back on a job he feels will help others.

Here's an example. Ed's been a trustee of Thiel College, Greenville, Pa., since 1945, and is now president of the board of trustees. In the absence of a college president Ed jumped in and is acting as president of the school.

You'll find him leading or taking an important part in all sorts of drives and campaigns to help make the Pittsburgh area a better place to live in. It's part of his nature to lend a helping hand where he can.

Between times Ed does a first-class job as president and chairman of Pittsburgh Forgings Co. and Greenville Steel Car Co. He's president and a director of The Neville Co., and a director of six other companies.

Ed was born in Henderson, Ky., where his family was in the tobacco business. He received a degree in electrical engineering from Virginia Military Institute. Then he married a Pittsburgh girl, Emma Clyde, and moved to Pittsburgh.

Ed likes a friendly round of golf and a little trout fishing. He enjoys riding and keeps a saddle horse. And he's mighty proud of the fine herd of Hereford cattle he's raising on his farm near Ligonier, Pa.

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WILLIAM H. HARRIS, JR., elected vice-president in charge of engineering of Micromatic Hone Corp., Detroit.

A. WILLIAM TILDER, appointed vice-president and general manager of Acromatic Tool Co., Oak Park, Mich.

WILLIAM AVILA, elected vice-president and plant manager of Bardwell & McAlister, Inc., Burbank, Calif.

H. G. BRATT, appointed general manager of manufacturing, Metal Div., for Continental Can Co., New York.

IRON AGE *introduces*

Continued

Gerard "Jerry" Kelly, named field representative, TELEFEX sales division of the AUDIO & VIDEO PRODUCTS CORP., New York.

L. F. Bross, advanced to manager of the rail and track fastenings department of ROBERT W. HUNT CO., Chicago. **A. A. Bareuther**, whom Mr. Bross succeeds, is on leave of absence.

Ray L. Hampton, named vice-president in charge of sales by MOSEBACH ELECTRIC & SUPPLY CO., Pittsburgh.

Walter B. Dillard, appointed manager of the California cotton mills division plant of NATIONAL AUTOMOTIVE FIBRES, INC., at Uniontown, Ala. Mr. Dillard replaces **Ronald C. Forrest** who has resigned.

T. V. Shea, heads up the new contract manufacturing division of ATHEY PRODUCTS CO., Chicago. **L. R. Davis** will be Mr. Shea's assistant.

Weldon Draper, appointed sales representative for ZIEGLER STEEL SERVICE CO., in E. Los Angeles, Pasadena, Alhambra and San Gabriel Valley. **LeRoy Mossis** represents the company in New Mexico and is located in Albuquerque.

Russell R. Atkinson, named sales manager, heating division of NORTHWEST FOUNDRY & FURNACE CO., Portland, Ore. **Herman C. Anders** was made engineering supervisor and **Frank L. Waller, Jr.**, was placed in charge of eastern sales.

Ressler A. Dusseau, appointed assistant general manager of the AUTOMATIC TRANSPORTATION CO., Chicago.

Dr. Henry M. O'Bryan, appointed manager of the physics laboratories, SYLVANIA ELECTRIC PRODUCTS INC., Bayside, N. Y.

Dr. John C. Warner, elected a director of the JONES & LAUGHLIN STEEL CORP., Pittsburgh.

Walter E. Palmer, appointed regional manager for ALL-STATE WELDING ALLOYS CO., INC., to cover New Jersey, Eastern Pennsylvania, Maryland, Delaware and the District of Columbia.

Hendley Blackmon, named manag of engineering association activiti for the WESTINGHOUSE ELEC TRIC CORP., Pittsburgh. **Harold Cheney**, appointed sales manag electronic tube division in Bloomfiel N. J. **Richard S. Sheetz** has been a pointed materials allocation coordin tor for the lamp division.

A. L. Mays, in charge of the ne branch office in Harrisburg, Pa., f WORTHINGTON PUMP & MA CHINERY CORP.

F. A. Hopp, appointed advertisin manager of the CLEAVER-BROOK CO., Milwaukee.

E. William Kalb, appointed assi tant manager of the steel sales d vision, FIRTH STERLING STEEL CARBIDE CORP., Pittsburgh. Arth **E. Gogol**, appointed traffic manage of the company's main plant McKeesport, Pa.

John S. Kerr, appointed as Cleve land district sales manager EATON MFG. CO., Reliance Div.

George Schroeder, appointed pur chasing agent for VAPOR HEATIN CORP. and ROTH MFG. CO., Chicag

OBITUARIES

Hugo T. Bofinger, 66, president o Manchester Iron Works, St. Louis Mr. Bofinger was one of four found ers of the firm and had been president since 1923.

Theodore L. Brantly, Jr., president of the Cro-Plate Co., Inc., Hartford Conn.

Leonard Michael, retired one tim assistant manager of the forme equipment division of the America Can Co., New York. He was 68 year old.

Lawrence E. Riddle, 74, former superintendent of U. S. Steel Co. blas furnaces at Duquesne and the Isabell Furnaces, Etna. Mr. Riddle was know as "dean" of blast furnace men in th Pittsburgh area. He served 53 year with U. S. Steel before his retiremen in 1946.

Frederic S. Gordon, first vice-presi dent of the U. S. Pipe & Foundry Co Burlington, N. J., at the age of 64.

Edward L. Zapp, chief metallurgis Tube Reducing Corp., Wallington N. J.

From Bumper to Tailgate . . .

N-A-X HIGH-TENSILE STEEL

Reduces Deadweight and Increases Durability

The widespread use of N-A-X HIGH-TENSILE steel in transportation equipment emphasizes two vital characteristics of this high-strength low-alloy steel.

1. *Strength with less deadweight.* N-A-X HIGH-TENSILE steel reduces deadweight . . . of great importance in transportation equipment and military vehicles.
2. *Exceptional durability.* N-A-X HIGH-TENSILE steel, with its high strength and toughness, has proved greater resistance to fatigue and impact at normal and sub-zero temperatures. Its inherent structure and composition greatly reduce the effects of abrasion and corrosion.

The response of N-A-X HIGH-TENSILE steel to severe cold-forming operations and its excellent weldability by electric arc or resistance, atomic hydrogen or heliarc, and all other processes, are added important characteristics of N-A-X HIGH-TENSILE steel.

The "Eager Beaver"

The use of low-alloy, high-strength steels in military equipment assures longer life with less deadweight.

GREAT LAKES STEEL CORPORATION
N-A-X Alloy Division • Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

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on the assembly line

automotive news and opinions

Auto steel buyers get breather . . . Steel outlook still critical . . . Requests for steel from automakers at all-time high.

by Walter G. Patton

Nobody Knows—No one can tell for certain if production will be continued through the remainder of this year without widespread shutdowns in the auto industry. The steel distribution picture is more confused today than at any time during or after World War II. Critical steel shortages have already occurred. The number of requests for steel help being received by automobile companies is today at all-time high.

Most requests for steel help involve bar steel, particularly carbon bars. For some unexplained reason, strip and sheet can usually be found in limited quantities in the open market. Conversion sources are being used to the limit to produce bar steel.

Most Meet Test—While a "blackout" in the automobile industry could come during the fourth quarter as a result of the steel shortage, as some sources have forecast, it is difficult to justify a flat prediction that this will actually happen. Predictions of automobile industry shutdowns because of a shortage of steel have come fast and frequently ever since auto assemblies were resumed following World War II.

In a few instances, auto plants were actually closed for lack of steel. In about nine cases out of ten, however, the industry found ways and means to carry on. Detroit's initiative beat the test.

Crisis in October—The critical month for auto producers will undoubtedly be October. Recent information indicates the steel distribution pattern for October will largely follow September. If CMP tickets have been honored as issued, the automobile industry undoubtedly would have been lost in the shuffle.

Steel companies will be permitted to hold free steel for automotive customers as they have been doing in the past. Conversion arrangements will undoubtedly be permitted to continue on substantially the same basis as previously. The decision to postpone the effective date of CMP from October to November temporarily clears the atmosphere even though it is no solution to the problem of steel allocations.

Abandoning Conversion? — Reports in Detroit have indicated that one major automobile supplier may be backing out of conversion but the majority of the industry was still trying last week to get as much steel as possible for production of a maximum number of vehicles.

Don't Tip Scales—A government ruling eliminating the attractiveness of conversion steel could be a serious thing to auto output. At the present time about 25 pct of the industry's total use of steel comes from conversion. Most of this is undoubtedly sheet steel.

However, the balance is steadily shifting toward bar steel made available through conversion. Many thousands of tons of steel production could be lost by unwise handling of the delicate conversion steel problem.

Machine Tools—A recent amendment to CPR 30 is expected by the government to afford enough price relief to break the present machine tool bottleneck. Whether it will or will not make expansion attractive to machine tool builders remains to be seen. (See p. 89.)

If the machine tool pricing picture is cleared up, Fisher Body will build Bullard machines at Grand Rapids. At the present writing, however, there is no official agreement to go ahead with this project.

Wary of Expansion—Failure to break down the machine tool bottleneck has been frequently laid at the door of Michael DiSalle, director of the Office of Price Stabilization. The machine tool industry is, generally speaking, a feast-or-famine business. Following the feast during World War II (which it scarcely had time to eat), the industry experienced a famine during the early postwar years.

As a result of their experience, particularly after the war, the machine tool builders are not inclined to over-expand as they did during

...ssembly line

Continued

...orld War II only to find themselves in competition later with their own machines. Subcontracting is their only outlet. Washington delay made it impossible.

Transmission Output—The automobile industry will continue in the fourth quarter the informal regulations for third quarter production of automatic transmissions. This agreement permits installation of automatic transmissions on 65 pct of the low-price cars, 65 pct of medium-price cars and 100 pct of high-price cars. Any cuts that are made will be taken across the board.

Zinc Stocks Down—Inventories of slab zinc have reached dangerously low levels and these inventories are melting fast because of the low volume of August shipments. There is no assurance that zinc users will be able to replace their stocks during September. As a result, sharp curtailments of shipments to the automobile industry are anticipated during September.

Rim Steel Shortage—One of the more serious shortages in the automobile industry recently has been rim steel. A large amount of production has been lost because of the lack of steel for wheel rims. The shortage has been particularly acute in the heavy-duty truck rim classification. Efforts are being made to obtain a directive to temporarily ease the situation. Indications are that no such directive will be issued.

Gray Iron Castings—Steel users are not alone with their raw materials problems. The heavy demand from the automotive and machine tool industries as well as aircraft and ordnance have also created critical supply problems for the gray iron casting industry.

The industry's advisory committee says it will need help from NPA to achieve scheduled levels of production. Reports indicate supplies of merchant pig iron, iron and steel scrap, coke and alloying elements are all critically short.

Big Subcontractor—Briggs Mfg. Co. has announced a huge subcontract with Boeing Airplane Co. for the production of jet bomber assemblies. Briggs assemblies will be used in B-52 bombers carrying eight jet engines. Briggs will produce wings, flaps, elevators, rudders, fins, bomb doors and landing-wheel-well doors.

The aircraft components will be built in a new plant now being built on Mound Rd. south of Eight-Mile Rd. Production is expected to get under way early in 1952. Briggs built many aircraft components during World War II.

Charity Begins—Before general subcontracting is attempted, Chevrolet is attempting to place as much defense work as possible with Chevrolet manufacturing plants. Recently Chevrolet held a clinic of plant managers and master mechanics at Tonawanda, N. Y.

Objective of the clinic was to distribute as much work as possible on the Wright R-3350 aviation engines among Chevrolet manufacturing plants. Chevrolet managers from Detroit, Flint, Bay City, Cleveland and Muncie attended the conference.

Jeeps Abroad—Willys-Overland is exporting more than 5300 vehicles overseas during August. The majority of these units will be civilian Jeeps. Willys station wagons, 1-ton trucks and sedan deliveries are also included in the total, however.

Willys shipments during August are expected to be 51 pct above May. The company has an export backlog of 17,518 units, according to Marcel F. DeMuller, president of Willys-Overland Export Corp. The vehicles will be delivered to 48 different countries during August, DeMuller said.

THE BULL OF THE WOODS — By J. R. Williams

WAIT! YES, I FEEL A PAPER DOWN IN TH' LINING OF MY VEST-- I'LL GET THAT AN' WE'LL GO THRU IT ALL!
NO, DON'T WAIT-- CALL BACK! WE'VE GOT TO LOOK FOR IT YET!
NOTICE HOW HIS PANTS JUMPED UP WHEN HE GOT HIS MEMO-RANDA UNLOADED?
YEH, TH' BULL SHOULD OF SAID, "CALL BACK TOMOR-ROW, WE'RE JUST UN-LOADING TODAY--WE'LL LOOK FOR IT TOMORROW!"
8-24
J.R.WILLIAMS
MEMORY'S GARDEN
T. M. REG. U. S. PAT. OFF. COPR. 1951 BY NEA SERVICE, INC.

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STICKERS... SINCE
WE STARTED USING
NATIONAL GRAPHITE
TRADE-MARK
STOOL INSERTS!"

WRITE TO NATIONAL CARBON COMPANY FOR INFORMATION.

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A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.
District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco
IN CANADA: National Carbon Limited
Montreal, Toronto, Winnipeg

Other NATIONAL CARBON products

BLAST FURNACE LININGS • BRICK • CINDER NOTCH LINERS • CINDER NOTCH PLUGS • SKIMMER BLOCKS • SPLASH PLATES • RUNOUT TROUGH LINERS • MOLD PLUGS • TANK HEATERS

west coast progress report

digest of far west industrial activity

by R.T.Reinhardt

Who Is Missing What? — Are western steel producers so sure of their iron ore reserves that heavy tonnage shipments to Japan are of no importance? Are they certain that full consideration has been given to the commercial value of western deposits?

While both of the primary producers of iron in the far West—Kaiser Steel Corp. and Geneva Steel Co.—have been scouting for additional reserves, ores of commercial importance are being moved at prices ranging around $30 per ton, f.o.b. Japan. Some of the deposits being mined may be of limited quantity, some are unproved both as to quality and quantity, but there is surface evidence that further exploration of the fields is justified.

Six Deposits—In the state of Nevada alone there are at least six known deposits worthy of further exploration even though the Bureau of Mines has worked on only a few. However, at least three of these are being worked for shipment to Japan under contract where the owner receives $25 per ton; the contractor gets from $4 to $5.50 per ton for open pit mining, hauling and loading on cars; and the railroad gets close to $4.

Can Be Used—Owners of unproved reserve deposits (unproved because they can't afford drilling costs) welcome the chance to realize a few dollars on their holdings in this way, although most would prefer to sell to domestic operators. Some of these deposits admittedly are high in phosphorus and sulphur, but average in the 50 pct to 60 pct Fe range, and can be handled in modern blast furnaces.

The tendency has been to either pass them by until better ores were exhausted, or to tie them up indefinitely with little or no immediate return to the owners.

A Little Action—One hot spot right now is the northeast corner of Nevada where at least four deposits are either being worked or are about to be.

Jack Simplot, Idaho industrialist, has completed a road into the northeast side of the Cortez Range from Palisade, Nev., to haul ore for shipment to Japan.

On the west side of the Cortez Range a good outcrop and cuts have shown enough promise to encourage the Utah Construction Co. to agree to some test drillings with options on shipping contracts. According to Ben Jackson, of Battle Mountain, Nev., principal in Iron King Adventurers, the Bureau of Mines is ready to go ahead with construction of an access road which will bring the ore to within about 20 miles of the railroad at Beowawe, Nev.

In east central Nevada, considerable tonnages are being shipped through Luning to Japan.

Catching Up—Three blast furnaces at the Geneva Steel Co. plant in Utah have been taking a beating since the first was blown in early in the last war. Now comes the reckoning. No. 3 was down for relining until 2 weeks ago and last week No. 2 was out of blast for the same job. No. 1 will be down next after No. 2 is relined.

Operation of the old Joliet blast furnace (Ironton No. 2) with a capacity of about 850 tons per day is helping to carry over during the relining operations. Hot metal is being moved by rail 11 miles from the Iron furnaces to Geneva's openhearths. During these iron production curtailments demand for scrap is increasingly heavy.

Still Over Capacity—In spite of these hurdles, steel is being produced well above rated capacity. Construction of the hot-rolled sheet facilities at Geneva are moving along nearly on schedule with shearing and tempering equipment expected to be in operation about the end of the year.

Extension of the plate mill facilities to strip mill has worked out well producing strip up to 76-in. wide down to 22 gage. Production on this mill is being almost equally divided between plate and strip. No cold-rolling facilities are contemplated, but the Pittsburg, Calif., mill of Columbia Steel Co. will cold-reduce Geneva's strip.

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the federal view

this week in washington

by George H. Baker

Inflation to Stay — Fact that President Truman and his leaders still are as firmly committed as ever to a long-range policy of "creeping inflation" is being borne out almost daily in the policy decisions of federal economic agencies.

Constantly hovering over the White House, however, is the fear that this steady and insidious decline in the dollar's value may get out of hand.

Mr. Truman's planners are fully aware that the advent of galloping inflation will spell their political doom.

Carrot on the Stick—Idea is to let inflation nudge ahead, little by little, over the months and years so that the mass of voters can be deluded into believing they are better off each year than they were in the previous year.

Such a policy contemplates, of course, that retired persons and others living on fixed incomes will be steam-rollered in the process. But this effect is dismissed with the coldly-calculating comment that "the end justifies the means."

More Wage Hikes—One of this week's examples of how this policy is being carried out lies in the Wage Stabilization Board's decision to approve "deferred increases" contained in collective bargaining agreements in effect before Jan. 26.

WSB justifies this inflationary action by claiming it is "in line with the congressional mandate that the wage stabilization program should give full consideration to the maintenance and furtherance of sound working relations."

In another wage action, Defense Mobilizer Wilson announced he would authorize "wage inducements" in cases where he might deem it necessary to lure workers to defense industries.

Big Noise—What it boils down to is this: Mr. Truman would rather talk inflation control than perform inflation control.

At the Capitol, pro-Administration congressmen are showing similar concern over the "importance" of keeping a big supply of money in circulation and avoiding anything resembling a minor business recession this winter.

Some anxiety is evident in cloakrooms over the possibility of limited deflation — resulting from a cease-fire in Korea, the prospect of a Treasury surplus, and a slackening of consumer demand due to production records set this year.

Relief Backlog — To guard against any such set-back (considered highly dangerous from a political point of view in the 12 months preceding a national election), Mr. Truman's planners are preparing a new batch of global relief projects that can be thrown into the breach on short notice.

Anti-depression projects already under way or scheduled for early expansion include rearmament of western Europe, construction of U. S. Air Force bases on "friendly" foreign soil, and technical assistance to dozens of backward nations who have pleas ready.

Probe Job-Hoppers? — Labor pirating in the machine-tool industry may bring on a Capitol Hill investigation.

No sooner had Charles E. Wilson moved to ease the tool-builders' supply problems by authorizing super-priorities than labor shortages stepped up as the industry's No. 1 headache.

One Cleveland tool builder told his representatives that he hired 140 people in May but had a net gain of only two employees. Absenteeism is running about 25 pct and about one-fifth of his employees are holding down two full-time jobs, he stated.

Welcome Metallurgists — Look for Congress to enact an official welcome to foreign metal scientists attending the World Metallurgical Congress in Detroit.

Bills now under consideration at the Capitol direct President Truman to grant recognition to the WMC and to the American Society for Metals for its sponsorship of this first world gathering of metal scientists.

Alloyed

THE IRON AGE
FOUNDED 1855
TECHNICAL ARTICLES

Metal powders replace machine casting

by Daniel W. Hoyt
Tool Engineer
Presmet Corp.
Worcester, Mass.

Costly machining was eliminated when waste disposer impeller blades of iron powder were run through a continuous, 2020°F furnace, with copper powder infiltrant blanks on top. Density up to 97 pct was obtained with good ductility. Cyaniding provides tensile strength up to 90,000 psi and hardness to 300 Bhn.

Extensive work has been done to improve the physical properties of powdered metal structural parts. High tonnage pressing, high temperature sintering, repressing, resintering, cold coining operations and alloying have all been investigated.

High tonnage pressing and high temperature sintering raise physical properties to some extent. However, they present problems which confine the use of either, for the most part, to laboratory work. Repressing and resintering of iron base alloys will also raise physical properties sufficiently for many applications. Repressing parts, for higher density and greater strength, results in severe galling of tools when using available pressure lubricants. This technique is limited to parts requiring heavy tooling.

Alloying of iron with carbon, in amounts ranging from 0.20 to 1.5 pct, increases the strength and hardness of sintered iron parts. It will give parts the added advantage of being subject to further heat-treatment, but adds to the difficulty in obtaining greater ductility. The use of copper as an alloying element, in the range of 3 to 12 pct, will increase the strength of parts sufficiently for many applications and is common practice in this field. Yet it does not help in increasing ductility of parts that are produced from a single pressing and sintering cycle.

A powdered metal part, pressed and sintered to approximately 80 pct of theoretical density, will have many tiny, interconnected pores, or voids, within it. Since these voids present, in effect, sharp corners within the part, they affect directly the ductility and, though possibly to a lesser degree, the strength of the part.

Other than by alloying, efforts to improve physical properties have been made by attempts to compress or close these inherent voids. With the culmination of work on these various procedures to close the voids and when limitations were fully realized, work began on infiltration.

Infiltration approaches the problem of voids from another angle. With each void acting as a stress raiser within the part, efforts were turned towards relieving this condition by filling, as nearly as possible, each void with metal. In this way, notch effect is reduced, much as the tool designer does it by adding radii or fillets to a production tool.

The perfect procedure would be to fill the voids of the sintered iron parts with liquid iron,

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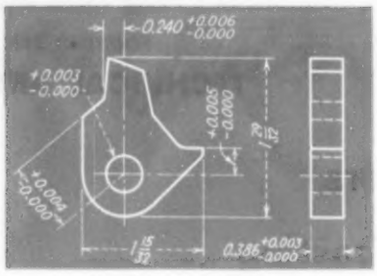


IMPELLER BLADE made of iron powder for waste disposer.

producing a uniform mass of iron of high density. This is impossible, since the infiltrant must be of lower melting point than the base metal. Therefore, the natural choice for this work has been the copper alloys.

Results of infiltration were surprising. The copper alloy infiltrant, in a liquid phase, does more than just penetrate and fill the voids, reducing notch effect. It also dissolves the surface of the iron particles causing alloying to some extent and welding the whole base structure together.

Such infiltrated powdered metal parts, with variations in subsequent heat-treatments, can have a variety of physical properties. Tensile strength ranges from a low of 50,000 psi, with elongation of 20 to 30 pct, to 90,000 psi, with 1 to 4 pct elongation. The infiltrated part has the added advantage of some resistance to corrosion.

This marked improvement in physical properties has extensively widened the field of applications, particularly for structural parts. This is not to say that this method of fabricating powdered metal parts is a "wonder" process. It certainly cannot replace all other methods of parts fabrication.

Inquiry and discussion of the complete physical requirements of any proposed application is recommended before tooling or production begins on any part. Yet this improvement is definitely a major step forward. For many applications, demands for stronger, more ductile materials can be realized.

One interesting application of this material is the impeller blade used in the Westinghouse "Waste-Away" disposer. Working members of the unit are the shredding sleeve, flywheel, impeller blades, and motor. The high-grade alloy steel shredding sleeve has three protruding shredding elements, double-edged for longer life. Below these elements are 45 slots for secondary shredding and straining.

The flywheel, which is keyed directly to the motor shaft, carries retractably mounted, double-edged impeller blades. These force the waste first against the shredding elements and afterwards the strainers. Vanes projecting downward from the underside of the flywheel provide a pumping action which forces the water-borne waste down the drain. The unit motor is capacitor started, induction run, and protected by a built-in overload protection unit, known as the "Thermoguard."

The infiltrated metal powder impeller blade replaces a high-carbon, high-chromium alloy steel casting which required extensive and costly machining. The cast blade required annealing prior to six machining operations. It was air hardened to 60 Rc.

Initial tests of powder metal blades were made by Westinghouse Electric Corp. with parts machined from sample slugs of infiltrated material, fabricated by the Presmet Corp. Laboratory equipment was used. When initial testing showed promising results, tooling was built to manufacture the part on a production basis. Part shape, requiring considerable machining by other methods of fabrication, is perfect for powder metal compacting, its uniform thickness presenting no difficult tooling or pressing problems.

The base metal of the part, electrolytic iron, is pressed in a Stokes "S" press to a green density of 6.3 to 6.4 g per cc, or about 80 pct dense. The compacts are sintered, then infiltrated, in a controlled atmosphere, conveyer-type Westinghouse electric furnace at approximately 2020°F. Best results on this particular application have been obtained with an endothermic type of gas atmosphere.

The infiltrant blank used for this part is also of powdered metal. Copper alloy powder is pressed to correct weight in the same tools as impellers, forming thin copper blades of exactly the same contours. These are easily placed over the parent compacts for uniform infiltrating to densities of 90 to 97 pct. After infiltration, parts are pot-carburized. They are then reheated and quenched in cyanide, from 1550°F. A file hard surface and a hardness of 250 to 300 Bhn are obtained.

The first lot of these parts, fabricated on a

DIES, PUNCHES and core rod used in pressing, shown together with the iron powder impeller blades and copper powder infiltrant blanks produced with these tools.

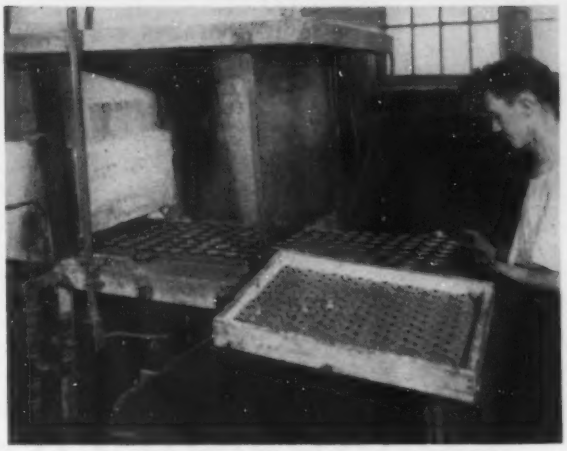
production basis, was sent to the Westinghouse plant at East Springfield, Mass., for further laboratory testing of physicals and for wear tests. This was done before final approval of the part for use in the disposer.

Unit tests included the shredding of some 600 to 700 lb of raw bones. These are probably the toughest waste that installed units will encounter. The impeller is mounted on the flywheel at a 2¾ in. radius. Motor speed is of 1800 rpm, with a surface speed of 2580 fpm.

It is possible to jam a raw bone between the impeller and shredder in such a way as to stop the flywheel dead. To be sure of a safety factor on impeller strength, should it jam from 1800 rpm to zero, laboratory tests were employed to simulate these conditions. Flexure specifications of a 3500 lb load were set up. Impellers withstood loads, in some cases, as high as 6400 lbs before breaking.

With component parts built to withstand the rare possibility of jamming, further protection against damage is provided by the built-in Thermoguard, which automatically shuts off the unit should jamming occur. The unit may be put back in operation after jamming by simply flipping the reversing switch. This releases the jam by causing the unit to revolve in the opposite direction. The reversing switch also prolongs the life of shredding elements. Since impeller blades and shredding sleeves are both double-edged, occasional reversal of rotation will greatly increase their service life.

Wear tests on the first lot of powdered metal parts were conducted, in part, by using them in the Waste-Away unit installed in the East Springfield plant cafeteria. All waste from some 1200 meals per day are disposed of in this equipment.



IMPREGNATION-BY-MELTING is accomplished by placing copper infiltrant blanks on the iron powder blades and passing them through a 2020°F endothermic gas atmosphere.

After three months continuous operation, units were disassembled for inspection. The impellers were found to be in excellent condition. Use under these actual, but rather accelerated operating conditions in the cafeteria unit, together with extensive laboratory testing, have proved this metal powder part. Infiltrated iron powder blades now successfully replaced the cast alloy formerly used in the waste disposer units.

NEW BOOKS

"Tool Engineering," by A. P. Gwiazdowski, presents a broad survey of machines and methods used in American industry today. The author has used production of a typical part to maintain logical sequence in discussing processing and machining operations. Various machining, inspection and gaging methods, heat treatment of ferrous alloys and welded assembly of jigs and fixtures are discussed at length. C. C. Nelson Publishing Co., Appleton, Wis. 306 p.

* * *

Galvanizing (Hot-Dip), by Heinz Bablik, is a comprehensive presentation of the theory and practice of hot-dip galvanizing. Both practical and theoretical aspects have been emphasized in discussions of scale, pickling, fluxes and the galvanizing process. The author, as lecturer on the subject at the Technical University of Vienna and also manager of a galvanizing factory is well fitted to present both sides thoroughly. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $10.00. 502 p.

"Metalworking Machinery Directory." A master reference index of approximately 800 machine tool builders and a listing of some 60,000 metalworking machines, with descriptions, are included in the second revised edition of this directory. The book reflects recent changes in corporate structure and plant ownership. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $3.50.

* * *

"The B.L.S. Consumer Price Index" by Max D. Kossoris. With the wages of several million workers tied to the Consumer Price Index of the Bureau of Labor Statistics, this statistical tool has each year assumed greater importance. This report briefly explains the birth, growth and use of an important index of our national economy. Management Report #99. California Personnel Management Assn., 2180 Milvia St., Berkeley 4, Calif. $1.00. 11 p.

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By C. Fred Sauereisen
President
Sauereisen Cements Co.
Pittsburgh

CORROSION-PROOF CEMENTS
Extend pickling tank life

Life of steel mill pickling tanks and other equipment subject to acids and alkalis is extended and maintenance costs are cut where corrosion-proof cements are used. Combinations of chemical and thermal-setting cements and impervious membranes provide adequate protection from most corrosive chemicals.

Life of steel acid pickling tanks and other steel mill equipment can be substantially lengthened by using proper materials and modern methods of corrosion-proof construction.

Protection from corrosive action of acids and caustic alkali solutions is of prime importance in construction of pickling and galvanizing tanks, floors, sewers, pits, chimneys and other steel mill and chemical plant installations.

Corrosion-proof masonry provides maximum protection at minimum cost. Properly installed it adds years to equipment life, cuts maintenance expense and material waste, and eliminates costly shutdowns. With materials now available corrosion-proof masonry can be adapted to handle all corrosive solutions. Such installations are highly resistant to abrasion and thermal shock and will not contaminate solutions.

Careful design of corrosion-proof equipment is important. Numerous acid-proof brick and tile are available with desired properties. They differ from other brick primarily in the type of clay used and in the methods of production. Acid-proof brick should be: (1) Structurally strong; (2) dense enough to prevent salt crystallization; (3) low in water and acid absorption; (4) resistant to thermal and mechanical spalling; (5) uniform and accurate in shape.

Acid-proof brick may be produced from either clay or shale, de-aired and vitrified uniformly throughout. Carbon brick is recommended for handling strong alkalis, hydrofluoric or hydrofluoric and nitric acid mixtures.

Care must be used to select a corrosion-proof cement possessing suitable characteristics. No one cement (see table) withstands all combinations of acids, alkali, solvents and temperatures. Silicate, sulfur and resin based cements are commonly used. Widely used with these are impervious membranes.

Silicate cements are produced in two forms, chemical setting and air drying. Chemical setting cement consists of a powder and a liquid which must be mixed to form mortar. Applied by troweling, it hardens into a dense, porcelain-like body which resists water, oil, electricity, most solvents, all acids (except hydrofluoric) and temperatures to 2000°F. Rapid construction is possible. Courses of brick may be laid up continuously without causing walls to settle or bulge. An installation with cement of this type is ready for use in 18 to 24 hr.

Air drying cement is usually supplied as a ready mixed paste. Because it must harden by

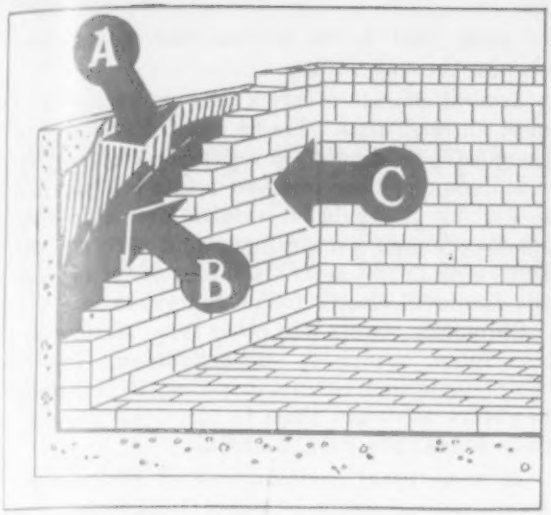

FIG. 1—Typical acid tank construction shows use of corrosion-proof materials. Acid and alkali resistant paint "A" is brushed or sprayed on outer shell. Impervious membrane "B" is troweled on at room temperature. Brick lining "C" uses corrosion-proof cement.

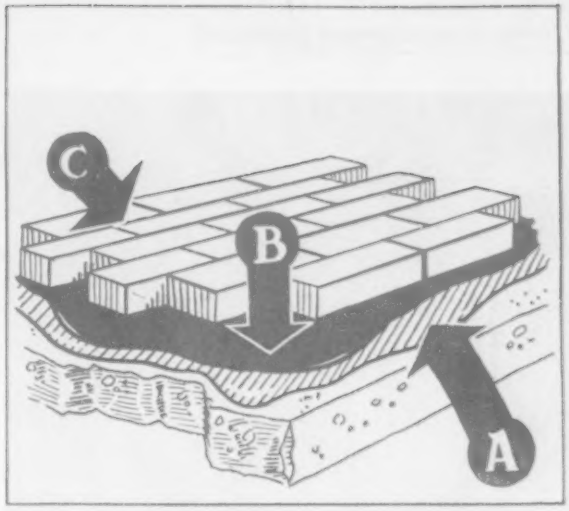

FIG. 2—Carefully leveled subfloor receives prime coating "A" of acid and alkali resistant paint. Impervious membrane "B" is troweled on 1/8-in. thick. Bricks "C" are mortared with suitable corrosion-proof cement.

air drying or baking, construction is slow. Only a few courses of brick can be laid without squeezing the cement out of the joints. For water resistance air drying cements must be washed with a dilute acid solution after hardening.

Sulfur cements must be heated to a molten state and poured into place while hot. They are supplied in the form of powder, chips or ingots. Two types are available, regular and plasticized. The plasticized has the same properties and application as the regular but is particularly adaptable where thermal and mechanical shocks are prevalent. Sulfur cements harden immediately upon cooling and may be used at once. They provide a strong bond resistant to water, electricity, most solvents, practically all acids, weak alkalis and temperatures to 200°F.

Furan resin and phenolic resin cements are in common use. They consist of two parts, a powder and a liquid resin, which must be mixed to form cement. The furan type can be stored indefinitely, before mixing, without deterioration; phenolic type cements deteriorate rapidly in storage and should be purchased as needed. Application is by troweling. Hardening is due to chemical action. Resin cements are extremely dense and have an absorption of less than 1 pct. They have excellent resistance to most inorganic acids, organic acids, alkalis of all concentrations, oils, greases, solvents, water, steam and temperatures to 350°F.

Wide Choice of Membranes Possible

Impervious membranes are required in practically every type of corrosion-proof installation between brick lining and outer shell. The membrane should be pliant and retain flexibility. It protects the outer shell from attack by seepage and overcomes effects of expansion and contraction caused by temperature changes. Impervious membranes may be of rubber, lead, or one of the various asphalt or bitumastic compositions. Choice depends upon chemicals being handled, operating temperature, and type of supporting shell.

Pickling tanks and similar equipment have outer shells of reinforced concrete, steel or wood which have rigid walls and are liquid tight. A typical brick-lined tank is shown in Fig. 1. Thickness of brick lining is governed by size

SELECTION CHART FOR CORROSION-PROOF CEMENTS

Type Cement	Hardens By	Apply By	Setting Time		Temp. Limit, °F	Strength, psi		Approx. Wt per cu ft	Quantities Required per M Brick			
			Initial	Final		Tensile	Compres.		Size Joint	9x4¼x2½ in.	8½x4x3½ in.	8½x4½x1¼ in.
Silicate	chemical set	trowel	30 min	18 hr	2000	400	3800	121	1/16 in.	315 lb	340 lb	238 lb
Resin	chemical set	trowel	90 min	25 hr	360	1400	12000	96	1/8 in.	512 lb	536 lb	376 lb
Sulfur	thermal set	melt and pour	5 min	5 min	200	854	6500	132	¼ in.	2000 lb	2270 lb	1590 lb

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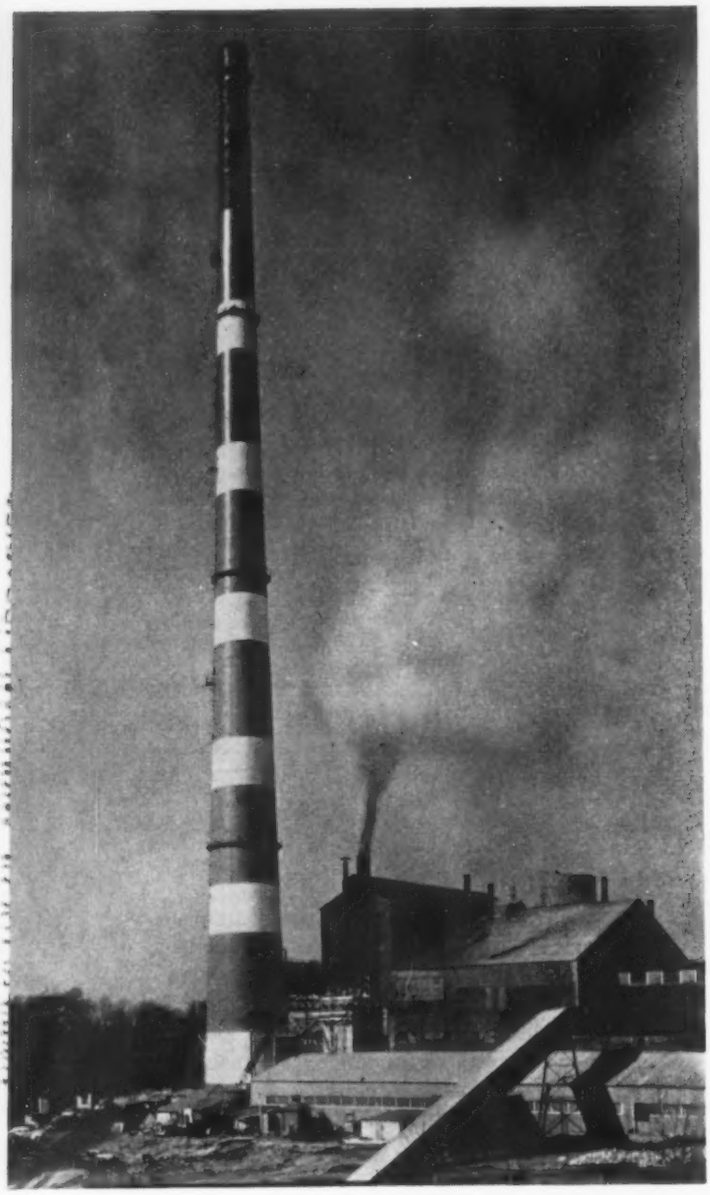

of tank, load to be carried, and temperature change through lining.

Several courses of brick may be necessary to meet all conditions. Traffic, type of service, and chemicals encountered govern floor construction. A satisfactory floor for most plants is illustrated in Fig. 2. It should be installed over a concrete sub-floor sloped for drainage and carefully finished with no low spots. Contour of the brick or tile floor will closely follow the sub-floor.

Chimneys, sewers and other types of construction follow principles outlined above. Due to their specialized nature, however, it is usually necessary to design them to individual plant requirements. See Figs. 3 and 4.

In some cases combinations of two cements secure desired results. Many installations have used chemical setting silicate cement to lay the brick. Surface joints are left open to a depth of ½ in. When completely hardened it is neutralized by washing with a dilute acid solution. Joints are then pointed with a resin cement.

A combination of sulfur and resin cement may also be used. When a two-course lining is used the inner course may be bonded with resin cement and the back course poured with sulfur cement. The former acts as a seal preventing leakage of the molten sulfur cement. The hot sulfur speeds setting of the resin cement.

Joints made with either silicate or resin cements should be kept as thin as possible, not over 1/8 in. This provides the strongest joint and also the most economical since corrosion-proof cements cost considerably more per unit of volume than brick. With sulfur cements at least a ¼ in. joint is required to allow the molten compound to flow into place.

FIG. 3—Concrete chimney has acid-proof brick lining laid with silicate type corrosion-proof cement. Chimney is 500 ft high. Inside diameter is 8 ft.

FIG. 4—Steel acid pickling tank has brick lining laid in acid-proof cement. Impervious membrane separates the lining and the steel shell.

How to get the most from your lathes—

Centers,

Tailstock turrets,

Collets,

Chucks

No. 2 of a series

By John E. Hyler
John E. Hyler & Associates
Peoria, Ill.

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Tailstock turrets can often eliminate second operations. Bed-type turrets practically make an engine lathe into a turret lathe. Special centers, steady rests, collets and faceplates can increase the versatility and production of engine lathes.

Appreciation of work which may be done by tooling the lathe tailstock is growing. This has been a powerful factor in making the engine lathe more versatile.

Clamping facilities for lathe tailstocks are being improved, in regard to both better and faster action. One tailstock has quick clamping and unclamping action through a lever which actuates front and rear clamps simultaneously. This is accomplished through an equalizing mechanism which insures application of equal clamping pressure at four points.

Some lathe tailstocks have a clamp in the form of a long wedge. Unlike ordinary eccentric binders, this device binds the tailstock spindle over a considerable portion of its length. These tailstocks have their upper surface accurately graduated to facilitate drilling to given depth. While many tailstocks incorporate the cross or setover adjustment for doing occasional taper turning, taper turning attachments are being utilized more and more.

Ball bearing centers are available from various sources, but some lathe tailstocks are now available with such centers inbuilt. In various cases this is highly advantageous. Some tailstocks now incorporate automatic lubrication, to minimize wear. Some large lathes have a conveyor mechanism which propels the tailstock longitudinally along the bed, by means of a pinion engaging the regular bed rack. There are also air-operated tailstocks.

Hole saws can be used

In addition to a large range of drilling, reaming and tapping handled from the tailstock, other types of tooling can be used, such as hole saws held in a chuck mounted in the tailstock.

There is also the possibility of actually replacing the tailstock with a tailstock turret, which will carry a number of tools. Though tools in a tailstock turret have motion only along the line of lathe centers, there are nevertheless many cases in which such turrets are found highly advan-

tageous. Availability of a number of tools for tailstock operations often eliminates need of second-operation jobs.

One device of this nature carries six separate tools if desired, and has a hardened tapered indexing pin which seats in tapered sockets in the head of the device. In not a few cases, use of such a turret is combined with use of a toolpost turret, to make a lathe highly versatile.

Some provide tailstock turrets that incorporate five tool-holding stations instead of six. While they will furnish these devices with a stud arbor having a Morse taper, making them interchangeable between different engine lathes in the same shop, they nevertheless recommend that the device be fitted to the outside diameter of the tailstock spindle, claiming this provides greater rigidity.

Bed-type turrets are also available. They give an engine lathe very much the appearance of a turret lathe, and in a very real sense fit it for doing turret lathe work. The base of such a turret clamps tightly to the lathe bed. The turret is hex type, and is generally self-indexing. Incorporated in many cases is a set of stops which automatically index with the turret to control depths of cut.

Special bed turrets available

Some bed turrets have bases designed to clear the lathe saddle wings. This allows them to be moved up with the turret close to the lathe headstock whenever necessary. Some have provision for allowing the turret to be back-indexed if desired. Some of them have the turret head equipped with a special coil spring, which functions to maintain constant tension on the head, together with a lock-down handle for adjusting the amount of this tension. All of these are operated with a pilot wheel at the operator's side of the machine.

One manufacturer of light lathes, however, provides a lever-operated bed turret for his machines. It indexes automatically with its slide motion, and is provided with six independently adjustable stops. These are geared to and therefore automatically index with the turret head to control cutting depth for each tool in succession.

Though some lathe tailstocks have built-in ball-bearing centers, in most cases they are separately purchased and applied. One such center of special interest is spirally grooved to allow ready entrance of lubricant to the center point. The helical groove in these center points is lefthand cut, so the action of the workpiece conveys the lubricant into the work. A special centerpoint oil is used with these grooved centers. It is claimed that such centers have an operating ratio, as regards running time, of 15 to 1 over a conventional center.

Centers fitted with tungsten carbide tips have far greater wear resistance than centers of high-speed steel. Some of these have been developed with a larger-than-ordinary tip, extending deeper than usual into the metal in which it is set.

Half centers, female centers, pipe centers and bull head centers are all available in high speed steel. And ball bearing centers have found a high degree of acceptance. Some of these are made to a greater than ordinary degree of precision. They are recommended especially for use in connection with carbide cutting tools.

Most ball bearing centers are of shank type, but it is possible to obtain such centers of outside spindle type for very heavy work. These are designed and used in larger sizes to handle heavy-duty turning of parts weighing up to 60 tons, at very close tolerances. Such centers will handle the heaviest feeds with carbide tools. Pipe head centers, as well as standard and special bull heads, are available in ball bearing models when desired.

One type of ball bearing center has its point made integral with a stepped bearing cover in such manner as to fully exclude dirt and chips, at the same time providing a cushioning action against end thrust.

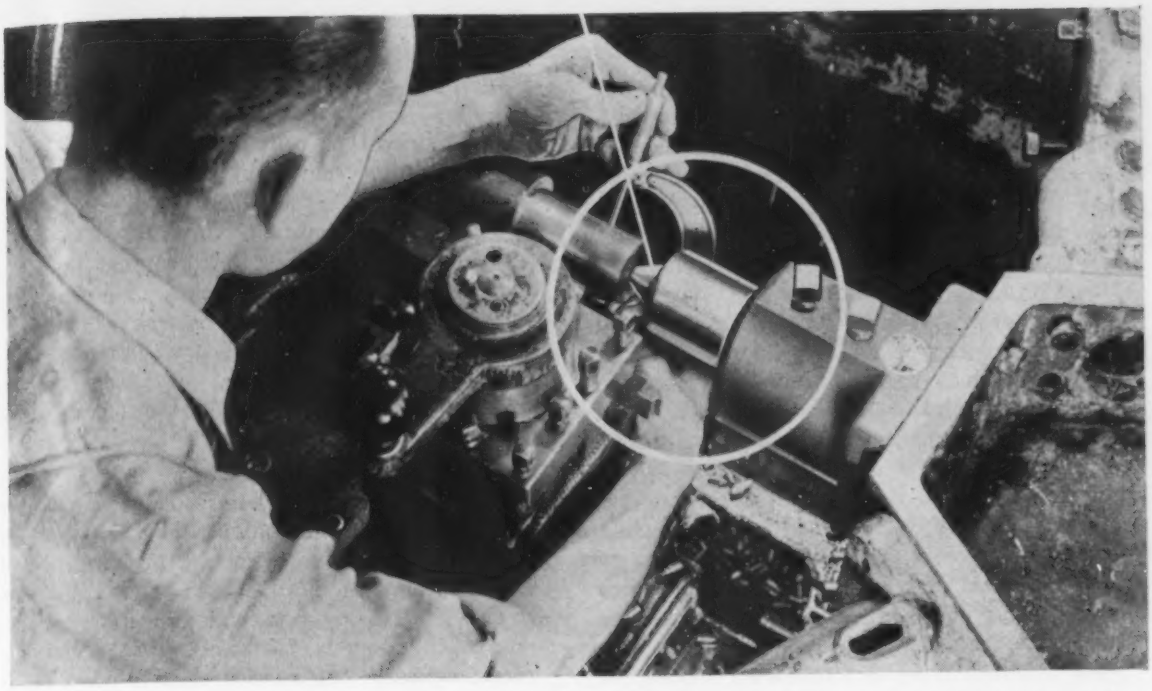
One live center has a tapered roller bearing to function as a thrust bearing, in addition to incorporating a radial ball bearing. The male point may be readily removed and replaced with a female insert, which has a female cone to receive ends of uncentered work, such as drills, shafts and tubes.

In addition to this, there is available a female insert which has three raised lands, 120° apart. When this insert is used, only these three lands contact the end of a workpiece. Consequently, uncentered rounds having a flat on one side, or uncentered shaft having a burred keyway at one end, can still be held without the flat or the keyway causing them to take a position off center.

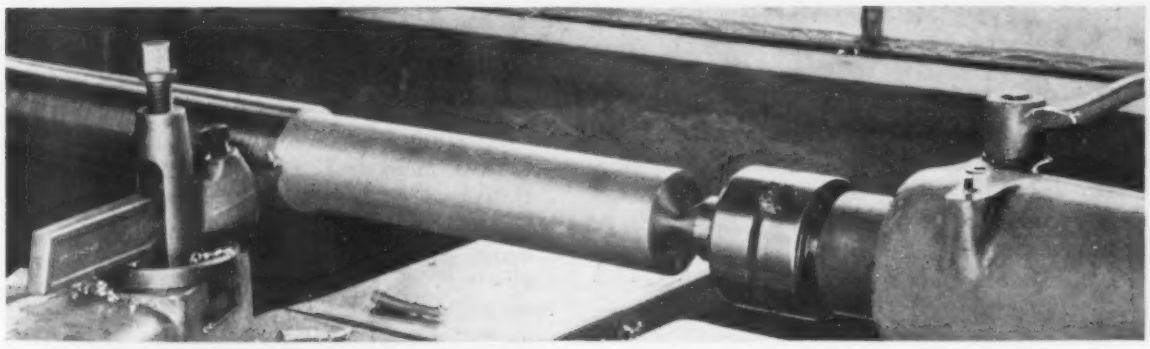
Steady rests useful

The steady, or center, rest is often used to support long slender rods and workpieces held between centers. However, it is also employed for supporting ends of relatively long pieces that are to be end machined with tools in the tailstock or the toolpost. The contacting jaws are generally made of cast iron. As made by some manufacturers, these jaws are provided with renewable tips. One center rest has telescoping jaws, actuated by double-acting compond screw threads which provide about 3/16-in jaw movement for each revolution of the adjusting knob. There are some instances where steady rests are required for operations in connections with higher work speeds, where the ends of their jaws are fitted with rollers that revolve with the work.

Follow rests are attached to the lathe carriage, travel with it, and therefore offer continuous support close to where a lathe tool is cutting. They are sometimes slotted at their lower end to fit over screws in the lathe saddle. With this ar-



LIVE CENTER incorporating a tapered roller bearing shows inside the white circle. This acts as a thrust bearing. Both toolpost and bed turret are being used on this lathe, the live center being mounted on one side of the turret.



LONG WORKPIECE being machined on an engine lathe, using a live center with a double-row angular-contact ball bearing which takes care of thrust load.

rangement, screws in the lathe saddle need never be removed, but only loosened and tightened when dismounting or mounting the follow rest.

The usual follow rest differs from the steady rest in that it has only two jaws instead of three. It is taken for granted that the work will not spring toward the cut, so the two jaws of the follow rest are disposed to counteract the cutting thrust from the tool. There is, however, an occasional follower rest of three-jaw type found in use. These do not have their jaw axes 120° apart like a steady rest, but 90°. One jaw, contacting the workpiece behind, is horizontal. The other two are vertical. However, the two vertical jaws enclose the workpiece when plain jaws are being used. Roller-type jaws for these follow rests are also available.

Various special rests have been devised and used for work needing out-of-the-ordinary support. One of the most interesting is a pillow-block rest. "Pillow block" is a term applied to a large bearing block of stationary type which may be lined with babbitt or bronze, or which may incorporate either ball or roller bearings.

The pillow-block rest, when applied to a large engine lathe, is an encircling frame clamped to the lathe bed like a standard steady rest, but it provides means for staunchly supporting the pillow block in the right position when it is mounted on the workpiece. By this means, various workpieces may be supported in a large lathe like a shaft in transmission bearings, while turning.

Collets, used as lathe work-holding devices, have far greater accuracy and much faster action than the usual jaw-type chuck, especially where relatively small work is concerned. While head-

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stock spindle chucks are used in moderation for holding small-diameter work, especially in toolroom and experimental applications, the draw-in collet is more popular by far. The draw-in collet is sometimes replaced by a step chuck and closer, for holding disks, gear blanks and related items. Small-diameter disks are held in a pot collet.

Most lathe operators encounter instances in which it is desirable to have a lathe collet fitted with an internal stop, against which the end of the workpiece may be held when it is placed in the collet. Special collet stops are available which may be employed with standard collets. The greatest diameter of the collet-stop body is small enough that it offers no interference to engaging the draw-in collet thread in the drawbar. The collet-stop body is provided with a lock screw and a lock nut at its rear end, by means of which the stop proper may be positioned at any selected point inside the collet.

Four different types of stops are provided for insertion into the collet stop body. Two of these are solid stops, one being larger in diameter than the other. The other two stops are also large and small in diameter, but they incorporate a special spring ejector. Thus, when a workpiece is inserted in the collet, it is pushed firmly back, compressing the spring. When the collet is later loosened to release the work, the spring ejector helps make it easy to unload.

The standard method of pulling a draw-in collet into the sleeve in the spindle is use of a hollow drawbar which passes through the headstock spindle and is fitted with a handwheel. It is necessary, when using this arrangement, to stop the lathe spindle when tightening or releasing workpieces.

Lever-operated collet is faster

On production work, it is generally better to employ a lever-operated collet opening and closing device, because it allows very fast opening and closing so that the lathe spindle need not be stopped.

Use of actual collet chucks attached to the lathe spindle nose extends capacity with regard to workpiece diameter, since these eliminate need for drawbar passing through the lathe spindle.

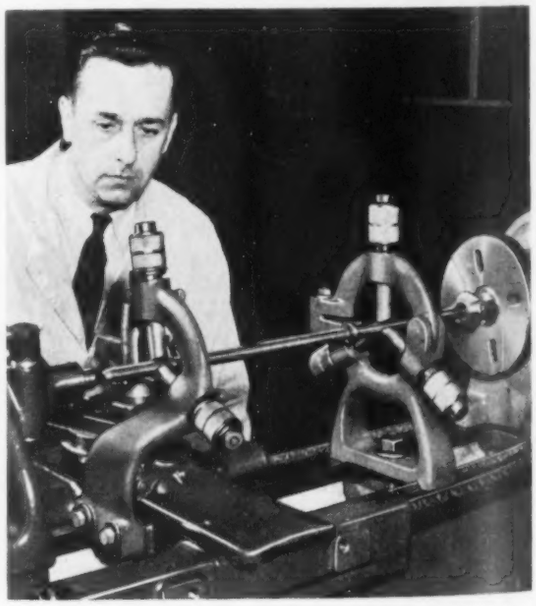
There is a collet chuck case incorporated which encloses the chuck proper. A short ball-handled lever is used for loosening and tightening the collet. Only the collet and its nose seat revolve, and it takes only a few seconds to change collets in the chuck while in operation. This chuck has a stud which is entered into a hole drilled in the headstock frame to prevent the chuck proper from revolving.

There are in general four different types of lathe spindles in use. Leading manufacturers of collet chucks provide such units applicable to any one of the four types: Threaded-nose spindles, cam lock spindles, taper key drive spindles, and American Standard lathe spindles. The latter require use of hollow-head capscrews for attaching.

Some draw-type collet chucks make use of a mechanism incorporating pivoted fingers actuated by a bushing, much like the design of various power transmission clutches. These are lever-operated, and have the advantage that they will not wear out collet threads. The lever bar incorporates a ring which encircles the finger-actuating bushing, and the lever stands in vertical position where it is very convenient to operate. Any type of spindle stop can be used with this chuck.

A relatively new departure in lathe collet chucks is one using special collets which have their expanding and contracting action through rubber. A number of steel jaw plates, drilled at intervals and radially disposed around the collet in uniform spacing, are bonded together and into one collet assembly by means of a special synthetic rubber. The rubber used is not affected by heat, coolants or cutting compounds, and it provides a much larger range of expansion and contraction than the standard collet.

These collets have no threads. The chuck body has a protruding hub-like member, taper bored to match the taper of the collets, which are tapered over practically their full length. A cup-type member with a hole larger than the maximum collet capacity is set over the hub, and has axial sliding contact on it. The outer surface of this member is threaded to match internal threading on a surrounding member. This is revolved by a handwheel. In this way, when the handwheel is revolved, the cup-type member men-



EXTRA SUPPORT for this long, slender workpiece is provided by a steady rest, right, and a follow rest. The follow rest, left, is fastened to the lathe carriage.

COLLET CHUCK operated by a handwheel. Turning handwheel one way or the other tightens or loosens the chuck.

COLLET CHUCK of lever-operated type, with collet removed and replaced by an expanding arbor for internal gripping.

tioned is resultantly given a sliding motion axially on the hub.

The arrangement is such that the overhanging portion of the cup-type member directly engages the end of the special collet. Thus when the handwheel is turned in the proper direction, the collet is forced into its tapered seat, whereupon the rubber-and-steel-jawed assembly contracts evenly on the workpiece and grips it powerfully. A change of as much as ⅛ in. in ID is possible with one collet of this type. In consequence, a much larger range of work is handled with much fewer collets.

Much of the powerful grip obtained by the type of collet just described arises from the fact that their grip is truly parallel. True parallelism in the grip can be obtained with all-steel collets only if the collet is one which is completely divided into separate sections. Such a collet is used in one lever-operated collet chuck. The cone-shaped collet in this case is divided into separate, self-aligning sections, and these sections are held together with special spreader springs. Allowing a full-floating self-aligning action to each collet jaw, this design applies uniform and parallel pressure over the full length of engagement.

This chuck incorporates a knurled ring in the back, by means of which the amount of pressure exerted on the work by the collet may be adjusted. Provision is made for removing the collet and substituting a special expanding arbor for gripping workpieces internally. The expanding arbor is kerfed through in such manner that it is divided into four parts.

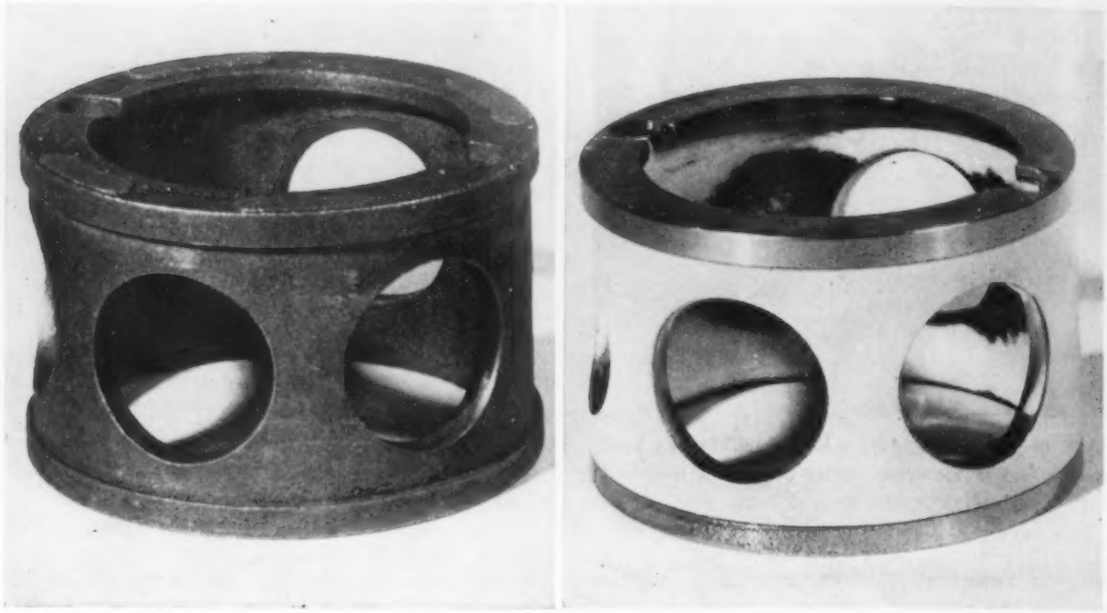
Mandrels are needed in many cases to hold bored parts for turning, which cannot be held between centers to advantage otherwise. Some expanding mandrels use the collet principle of expansion, having a flexible sleeve taper-bored and mounted on a tapered arbor. Moving the sleeve endwise on the arbor expands or contracts it. Other expanding mandrels have sliding keys. The keys are tapered, and slide in seats longitudinally tapered with the axis of the mandrel. The keys are attached to a sliding sleeve. Coil spring tension exerted on them keeps them snugly in their grooves whether they slide in an expanding or contracting direction.

All work-holding devices mentioned so far are designed to hold the axis of the workpiece on the line of lathe centers, whatever the particular operation involved.

Also, there is a device available in the form of a special faceplate incorporating an adjustable slide, on which slide a boss is provided. The slide also incorporates a tapped hole to receive a special chuck stud. An L-plate and also a three-jawed chuck is provided with this special layout. The L-plate can be attached, or various other special fixtures may be similarly attached, by locking it to the boss on the slide. The three-jawed chuck fastens to the slide with a screw-in stud.

By chucking a piece of work and moving the slide the necessary amount, a workpiece can be turned eccentric to any desired degree. By moving the slide across the face plate and rotating the L-plate or other special fixture on the boss, any desired point in the workpiece can be brought to exact lathe-spindle center.

Porcelain enamel selector valve cuts maintenance



STAINLESS STEEL aircraft fuel selector valve before and after porcelain enameling. Porcelain enamel provides high abrasion resistance, a low coefficient of friction, and is highly resistant to corrosion.

Building better parts for aircraft requires unusual manufacturing techniques. Ground and lapped porcelain enamel on an aircraft fuel selector valve recently solved a problem of positive dependability under highly critical conditions.

Valves must function under extremes of temperature and humidity. Serious atmospheric contamination such as concentrations of sand or dust, corrosive conditions such as the presence of sea water spray and chemical effects of additives in aircraft fuel are encountered.

Under such conditions the working parts of the valve must provide a wear resistant, nongalling and corrosion-free surface.

Most individual characteristics can be obtained with various types of metals. The choice of a metal which will deliver all of these characteristics in a degree sufficient to pass the grueling service testing requirements is difficult.

Aircraft fuel selector valves must be operated totally dry over several thousand cycles without galling or excessive wear. Most of the possible metal choices fail in the extended dry operation test.

A combination of corrosion resisting metal finished in porcelain provided the answer to this problem. The valve passed all requirements of the armed services.

A plug type fuel selector valve perfected by Aero Supply Mfg. Co., Inc., is first cast in stainless steel and machined to precise dimensions. The outer diameter of the plug, which is the wearing surface in contact with the valve seals, is then porcelain enameled. Service records show all-metal valves require repair about every 3 months. A prototype valve of the porcelain enamel protected design has been in service for over 5 years without maintenance.

A special acid-resistant type of porcelain enamel was developed especially for the job. Application conditions must be controlled critically to assure a perfect product. The plug design presents an outer diameter which cannot be porcelain enameled at the top and bottom. The balance of the exterior diameter is recessed to receive 0.015 to 0.020 in. of porcelain enamel.

Some surfaces must be absolutely free while other surfaces must be covered with porcelain enamel in a coating not to exceed a tolerance of 0.005 in. in thickness. Strict control of the porcelain enamel formula and firing temperatures must be maintained to assure a fully matured enamel at a firing temperature which will not cause warpage in the casting.

A final grinding and lapping operation on the external diameter of the plug brings finished dimensions to within a tolerance of plus 0.001 in., minus 0.000 in. Such an operation, while uncommon, has been successful.

Key to defense production in FOREMAN'S HANDS

By Fred Rudge
Partner
Fisher & Rudge
Management Consultants
New York, N. Y.

Rapid expansion of plant and production personnel and new high production goals have heaped chores on the foreman's back. He is the part of management closest to the rank-and-file. He must bolster morale, sell new ideas, new methods. The foreman needs more help from management to meet new problems.

The problem of helping foremen meet the many new demands of defense production is with us again. It is especially acute where supervisory growth has lagged behind expansion of plant and direct production personnel. The problem calls for renewed recognition by management that supervisors are key people and should be treated as such.

The national emergency is creating additional chores for the foreman. He contends with a rising rate of turnover, absenteeism, tardiness, and training of new workers as well as production problems. The supervisor must bolster employee morale, which is beginning to dip as a result of extended schedules.

He must keep alert for signs of overworking. Some employees, tempted by overtime pay, ignore Nature's limits — inviting accidents or breakdown. Others, with extra money to spend crave time off. The foreman has to have the answer ready—"It isn't the money, it's production that counts."

The foreman is the Number One factor in making acceptable workers out of new recruits. Even where staff help is available, the supervisor carries most of this burden: His is the day-to-day responsibility for results turned in by his crew.

Work simplification, new systems and new methods are the order of the day. Change frequently evokes resentment among employees. Part of the foreman's job is to sell the new ideas to show how they save time, effort and expense —and how they make employees' tasks easier.

The foreman has a human relations job to do. He is the "part of management" closest to the rank-and-file. He must help subordinates with their problems, personal and otherwise.

Typical are the questions asked by the employee about to leave for military service: "What will happen to my pension and other benefits?" "If I fall back on my mortgage payments, will I lose my home?" "Can my wife get a job with the

THE FOREMAN is the Number One factor in making acceptable workers out of new recruits.

company, if she needs the money?" "Will I get my job back when I am discharged from the service?"

The employee expects his foreman to have the answers ready, or to get the information quickly from the front office. The worker with a job problem turns to the supervisor for aid. He may want a transfer to some other department, or a place in a different shift.

Frequently people who have been offered jobs in other plants like to talk it over with the foreman before arriving at a decision. This gives the foreman a chance to sell his men on staying, especially if the company is engaged in defense work.

Exit interview is too late

Exit interviews are part of the standard role for foremen. However, as supervisors themselves will confirm, the employee whose mind is made up to quit is rarely converted by such an interview. Reversing his decision would involve painful explanations. The time to reach him is before he has voiced his intention to leave.

"Termination control" has paid off for some companies. Foremen are trained to recognize signals indicating an employee is about to quit. The foreman makes the initial interview. Step two is a report to the personnel department, suggesting the employee be called in to consider a transfer, a place on a different shift or whatever other reasonable changes might hold the man on the payroll.

Importance of the exit interview is its value in uncovering conditions which, if not corrected, may cause others to quit. Many permanent improvements have stemmed from such complaints. The record justifies interviewing every worker who voluntarily separates from a concern.

How to hold rank and file

In the interest of holding the rank and file, companies must work harder to help foremen "over the hump." Here are some things Fisher & Rudge surveys show bring worthwhile results:

1. Hold more supervisory meetings. Things are happening faster, and the average foreman feels the need for more direct contact with executives. He wants to ask questions and get answers, to "think out loud" with the men higher up, so he can do a better job. There is need for more and better *downward* communication. Nothing beats periodic meetings for this purpose.

2. Give supervisors more opportunities to consult with their superiors. "We're so busy, there never is a chance to talk matters over privately with the Boss," is a common complaint. *Upward* communication is important and tends to be neglected when top executives are rushed.

3. Add new foremen as fast as needed. There is a limit to how far supervisory personnel can be stretched. Long-term, this involves stepping up the management development program to provide new foremen; the short-term need is for upgrading workers to fill the present gaps.

Creation of new supervisory jobs is one way to take the expansion heat off foremen. Job titles in this category include: Room foreman, assistant-foreman, shift supervisor, assembly line foreman, group leader, monitor. Creating the new positions will probably require approval of the Wage Stabilization Board to avoid the charge of illegal wage increases.

4. Keep company policies in step with foremen's needs. Policies governing pay and hours of foremen should keep the pace. In the initial stages of expansion, many foremen have had to work longer hours with no increase in pay, although the workers under them automatically received overtime.

Such schedules cause discontent among foremen. If the practice is to last indefinitely, foremen's pay must be adjusted. Otherwise the differential between foremen's salaries and workers' take-home pay will be destroyed. Again, WSB must be consulted.

5. Increase staff services to help foremen with their problems. Management can cut the burden of detail for foremen by expanding staff functions. They will be better able to cope with problems of materials handling, scheduling, designing and quality control, setting-up and maintenance.

Management, however, must be careful not to "de-skill" the foreman's operation. Foremen should help decide on innovations. Foremen will

THE TIME to reach the worker is *before* he leaves.

want to make sure the new staff functions will help them, yet not reflect on their abilities. They will want assurance the clock can be turned back later, when these auxiliary jobs are no longer needed.

Supervisory grievances are mounting under the pressures of expansion and the impact of new policies and new problems. The thing that bothers foremen most is the problem — human or mechanical — which management has no way to settle or lacks authority or time to dispose of. Ways must be found to handle such cases quickly. The longer they lie in the foreman's lap, the more difficult they make his position.

Sudden expansion usually means less time to observe the amenities of daily living. Lines of authority and communications channels tend to be crossed; misunderstandings and confusion arise. Supervisors complain of being pushed away or brushed off by executives. Paperwork falls behind, sometimes followed by a rash of new forms and reports which in turn arouse resentment if not properly explained and justified. One moment, under one set of circumstances, the foreman feels harassed and pushed around; in the next, he sees himself as the Forgotten Man, unable to obtain the advice he needs.

THERE NEVER IS a chance to talk matters over privately with the Boss these days.

The best way out of a worsening situation is for the company to *find out,* via a foreman attitude survey, what conditions are most troublesome to the supervisory staff—and then set out, deliberately and with full top-management support and approval, to bring things back into balance as the situation demands.

Ultrasonic cleaner cuts cleaning costs

Removing small metal particles and grinding compound from capillary openings of electric shaver heads has been simplified through use of a new ultrasonic cleaning device designed by General Electric Co. Costs on this operation at Schick, Inc., Stamford, Conn., electric shaver manufacturer, are reported cut 58 pct.

Formerly each small opening was brushed. The new method simplifies the operation and eliminates brushing of each tiny hole, speeding the process and cutting labor costs.

The new device converts electrical energy into sound energy. The sound energy is then transmitted through a cleaning solvent. Shaver heads, mounted on a moving chain, are carried through the cleaner. As the parts pass through the activated field, grease, oil, metal shavings and lapping compound are removed. The unit requires only 12 sq. ft. of floor space.

The machine's generator supplies high-frequency voltage to a quartz crystal which, vibrating at its resonant frequency, generates sound waves in the liquid (saline solution) in contact with its upper face. These waves then pass through a thin diaphragm into the cleaning solvent where the cleaning action takes place.

Consumer installs

SLITTING and LEVELING PLANT

Precision flatness and more accurate cutting of steel coil stock for movable steel interiors were sought in a new slitting, shearing and precision leveling plant of E. F. Hauserman Co. Lower inventories, less waste have increased flexibility and permitted greater economy.

Flexibility and greater economy in making movable steel interiors for buildings have been obtained in a new slitting, shearing and leveling setup of E. F. Hauserman, Co., Cleveland.

Machinery is housed in a new one-story, all-steel 100 x 250 ft building. Equipment includes a payoff reel or uncoiler, gang slitter, Hallden flying shear, Voss roller-leveler, runout table, oiler, piler, conveyers, and baller to process waste material.

The company, pioneer in a recent trend among fabricators, has transferred an important steel mill operation to its own plant.

Manufacture of movable steel partitions and wainscoting requires flat sheet steel trimmed and leveled to precision. It was formerly necessary to lay every sheet on a flatness table for inspection and sorting. Sheets not meeting tolerance requirements were used as commercial quality material. Meeting precision requirements through use of the flatness table was costly and time-consuming

Production needs called for sheets of six lengths, ranging from 7 to 12 ft. Previously it was necessary to either stockpile multiple

STEEL COILS are loaded on slitter payoff reel. Expanding reel jaws fit inside diameter of coil.

SLITTER BLADES are set for desired widths. The only waste involved in the whole operation is edge trim.

lengths for flexible inventory, or stock large sizes and trim as needed—with resultant waste.

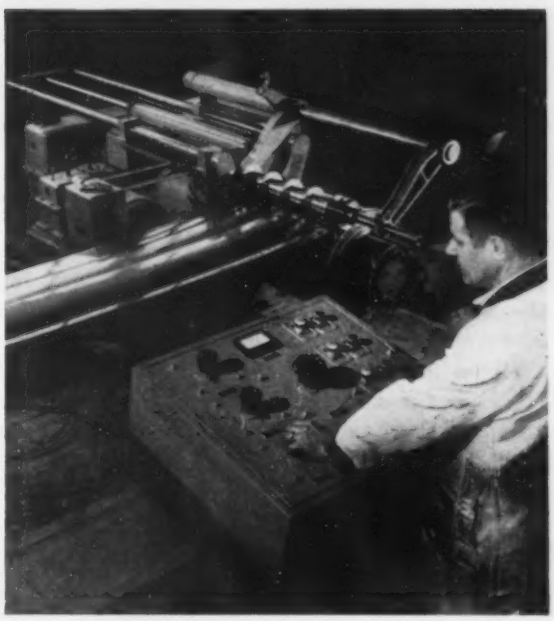
In the new department coil stock is slit to required widths, sheared to accurate lengths and precisely leveled.

Steel coils are delivered from steel mills by truck. Trucks use a straight-through, inside driveway with doors at either end. Coils are unloaded with a 10-ton bridge crane with a C hook, and stored in three 25 x 50 ft bays.

As processed, coils are picked up by crane and placed on the uncoiler. The stock passes through a gang slitter where knives trim edges, and slit stock to desired widths.

The steel may then be recoiled and stored. When sheets are desired the stock by-passes the recoiler and goes to the shear to be cut in sheet lengths.

A belt conveyer carries cut sheets through the oiler, then to the piler where they are stacked semi-automatically in required bundle sizes. The sheets are then pushed onto a roller conveyer



ELECTRIC EYE controls relative speed of slitter. When beam is broken by sag or loop of material between machines, slitter slows automatically.

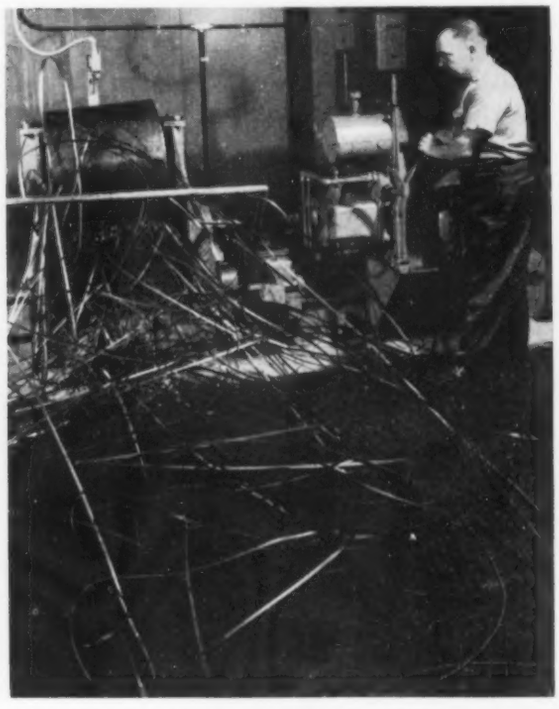
REWOUND COILS are pushed onto turnstile and swung in 100° arc out of way of slitting line.

FLYING SHEAR cuts sheets to length while line is moving. Leveler rolls, foreground, take set out of sheet caused by raw stock being in coiled form.

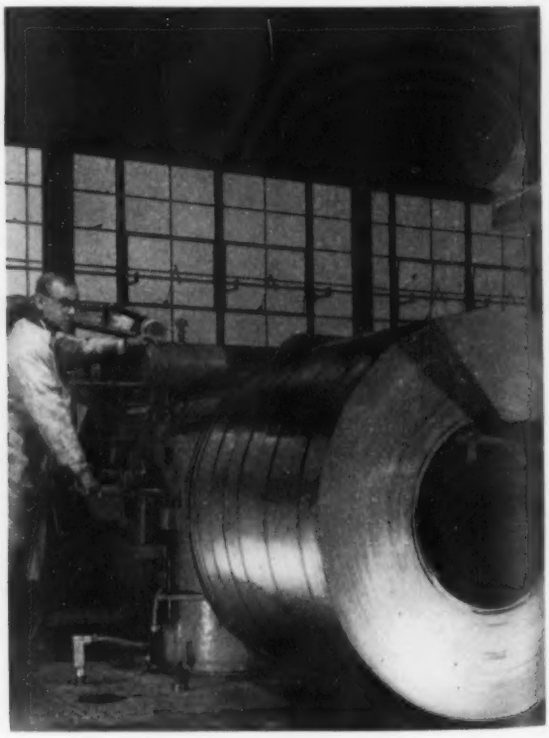
where the pile can be bundled without stopping the line. Bundled sheets are picked up by a Monorail crane and taken to storage.

Unbundled sheets from the piler or bundles from storage are picked up by Monorail placed on a conveyer, and fed through the leveler, over a belt conveyer runout table, and stacked. Leveled sheets from the piler are carried by Monorail to storage.

The Voss leveler, which replaces the stretcher leveler in the steel mill, produces a flatter sheet with a smaller percentage of rejects. Determination of flatness of all sheets in a bundle is possible by inspection of the first sheet. Other sheets are consistently the same as the first. Leveled sheets receive only visual inspection.



HYDRAULIC BALLER rolls edge trimmings into ball for easy scrap handling. Ball, weighing about 500 lb. is wound on tapered spindle, pushed out of carriage hydraulically.



SLIT AND STRAPPED coils wait at turnstile. C hook will remove coils from slitting line area.

PUBLIC RELATIONS—Bold New Concept Pays Off

Inland and Borg-Warner develop new program called "In Our Hands" . . . Uses no propaganda . . . Films help stimulate thought and discussion . . . Unions approve—*By Bill Packard.*

Inland Steel Co. and Borg-Warner Corp. are making public relations history with a new program called "In Our Hands." It's a way of telling the story of America as it has never been told before. Working together, these two firms have struck a mighty blow for freedom. And they've found common ground to bridge the chasm between labor and management.

You can do it, too. Inland and Borg-Warner have turned the program over to American Economic Foundation (295 Madison Ave., New York 17, N. Y.) for broad distribution. They had to because it caught on so quickly and grew like wildfire 'til demand for it soon became greater than they had anticipated. Only restrictions on its use are that you can't charge admission and you can't use it for political purposes.

Elementary—The technique they've worked out is tremendously effective; its acceptance rates very high. Yet it's so simple you wonder why it hasn't been widely used for years.

In its beginning the program was strictly an experiment by personnel of the two companies. They had an idea people would rather be *asked* than *told*.

Threw It Out—So they threw away the classic concept of public relations and created a new one. In the waste basket went the fat propaganda phrases and professional mumbo jumbo. In their place came a few provocative questions to cause employees to do their own thinking, to express their own thoughts, to form their own opinions.

Here's their idea: Give people facts and they will come to the right answer because it is the right answer if anyone thinks it through. That's why the program is aimed at stimulating thought and discussion. The answers aren't given: They are hammered out in discussion sessions.

How It Works—In its finished form the program has four parts. With each part there's a 15-min movie—to give the facts. After each movie the discussion leader reads questions from a flipchart. The "right answers" are talked out in open forum, like a town meeting.

Subjects covered by the four movies are:

(1) How we got what we have in this country.
(2) What we have.
(3) How to lose what we have.
(4) How to keep what we have.

Grass Roots—Experience has shown the ideal size group should be 12 to 15 people. In order to encourage frank discussion the program is not presented to mixed groups of employees and management. No representative of management sits in with other groups, nor supervisors with their crew.

The leader doesn't direct the discussion. He's from the same group of employees. All he has to do to qualify is to have seen the program, to be able to read and to volunteer to lead some of his fellows through it. His only training is an admonition not to do the talking but to encourage others to talk. Union grievance men acting as leaders have done much to dispel suspicion of the program.

Unions Approve—Some 50 other companies are now using the "In-Our-Hands" technique. It has shown some executives that the American worker is essentially conservative. That he believes one who supplies tools should be compensated. That he loves freedom. And he doesn't want a dictatorship, or Socialism, or Communism.

Probably the best testimonial to the program is that it is being used to train union officials. Representatives of the major unions have approved it.

Inland and Borg-Warner have been honored for their work by receiving the Freedom Foundation Award "for outstanding achievement in bringing about a better understanding of the American way of life."

Buzzing Industry

Although Inland Steel and Borg-Warner each refuses to take credit for the unique "In Our Hands" public relations program (they call it a joint experiment), they are well aware of the stir it's creating in industrial circles.

Refusing to hide their treasure under a basket, they soon saw it growing out of their hands. So they've turned it over to American Economic Foundation, 295 Madison Ave., N. Y., for distribution.

You can use it, too, if you'll promise not to charge admission or use it for politics.

CANADIAN STEEL—Controls Stay on Sidelines

Mills still distribute unmolested—yet . . . Shortage may ease next year but immediate defense needs will rise . . . Construction hardest hit . . . Output up—*By Fred Sanderson.*

With the government holding the power to lower controls over steel distribution but not exercising it, Canadian steel mills remain the ones to allocate to their customers. Steel men in Canada feel that the shortage will ease in the second half of next year providing international affairs do not take a turn for the worse. The immediate shortage will get more wicked.

Industrialists feel that Canada's steel needs will continue to rise for the rest of the year. Canada's defense programs have not been gobbling up steel to the anticipated extent but defense tempo will mount.

The steel shortage here has dealt the construction industry the most punishing blows and no improvement is seen until next year. Structurals, reinforcing steel and plates are entering the critical supply phase. Steel men are waiting for some heavy defense construction to blow over.

Wrong Relief—Consumer durable manufacturers appear to be better off in the shortage. Not many are rushing to Ottawa to seek special relief. This may not be any great cause for joy because it may be a reflection of slackening demand for their products. Motor cars have almo glutted the market and productio has been cut back. Stoves, refri erators, etc., have taken the sam body blows.

Canadian steel men know th steel shortage will get wor this year. But they hope tha their increasing production an greater imports from the Unite States and overseas may tid manufacturers over. In the fir half of 1951, mills here produce an all-time record of 1,763,16 tons of steel ingots. It was 7 pe over the same total last year.

Expansion programs will jum output by at least 300,000 tons year. For the final quarter thi year, Canada's allocation of ste from the U. S. is 343,600 ton Canadians hope that all of it wi arrive but they know that the fi ure has been set as a maximum Many more tons could be easil absorbed.

Imports from Europe hav found the Canadian market eage and willing. On a percentag basis imports from abroad sho a greater gain than those fro the U. S. The four main Europea sources, France, Belgium, Ger many, and Sweden, levered u the dollar value of iron and ste shipments by some four times i the first 5 months of '51. Highe prices can be credited for forcin dollar value up that far.

United Kingdom steel import rose 6 pct and rolling mill prod ucts 200 pct in the 5 month European steel is a desperati measure because prices are sub stantially higher than either Ca nadian or American.

Metalworking at Tire Plant

Making the steel molds to hold tires while they are vulcanized into final shape requires a master machinist's touch. B. F. Goodrich technicians at the firm's Arkon, Ohio, plant spend much time and exercise much care in cutting the mold, grinding it, and measuring it to make certain that forming of tread designs and tire markings does not go amiss.

The two halves of the mold are locked together. The tire casing is inside. High heat of vulcanizing makes the casing serviceable and forms the treads. First the mold is roughed out on Goodrich's boring mill. As shown in the picture above, the tread design is cut out. After chipping comes the grinding operation. A vent is cut into the mold and checked to see if it is the proper depth. Vents are necessary to relieve air built up in the mold during vulcanization.

New Coke Ovens for Clairton

Koppers Co., Inc., has bee awarded a contract for engineer ing and construction of three ba teries of 61 chemical-recover coke ovens, to be installed at th Clairton, Pa., plant of U. S. Stee Co. The new ovens will replac three older batteries. They wi carbonize approximately 4200 ton of coal per day.

SINTERING—Helps Ore Reserves Live Longer

Plants recover millions of tons of iron ore fines, flue dust . . . Sintering capacity is now 24 million tons . . . Will expand with steel capacity . . . List plants and yearly capacities.

Domestic iron ore reserves will live a little longer with the help of sintering plants. These plants each year recover millions of tons of iron ore fines and flue dust formerly stockpiled or cast aside as waste.

It is estimated that sintering capacity in the United States is around 24 million tons. This is likely to grow as steel productive capacity expands.

Freight Costs—Apart from conservation, use of sinter makes for smoother blast furnace operation. It increases iron production and reduces coke consumption. Rising freight costs also make it imperative for steel producers to make use of all the iron ore received. Ore fines in a stockpile represent an unnecessary waste of money and time.

Coke Breeze Fuses—Essentially, what a sintering plant does is to take the fines and flue dust, mix in coke breeze and then pass this mixture through a furnace, where it is fused into large semi-melted masses. The coke breeze serves as the fusing agent. In the newer plants, the sinter is cooled in rotary coolers before delivery to the blast furnace. The older method of cooling with water sprays, while faster, tended to shatter the sinter, thus partially defeating the purpose of sintering.

While most sintering plants are situated adjacent to the blast furnace, several are placed at the ore mine.

The two basic types of sintering plants are the Dwight-Lloyd and the Greenawalt. Companies that design and build these plants include American Ore Reclamation Co., Chicago; Freyn Engineering Co. department of Koppers Co., Inc.; Nichols Engineering & Research Corp., New York, and Arthur J. McKee Co., Cleveland.

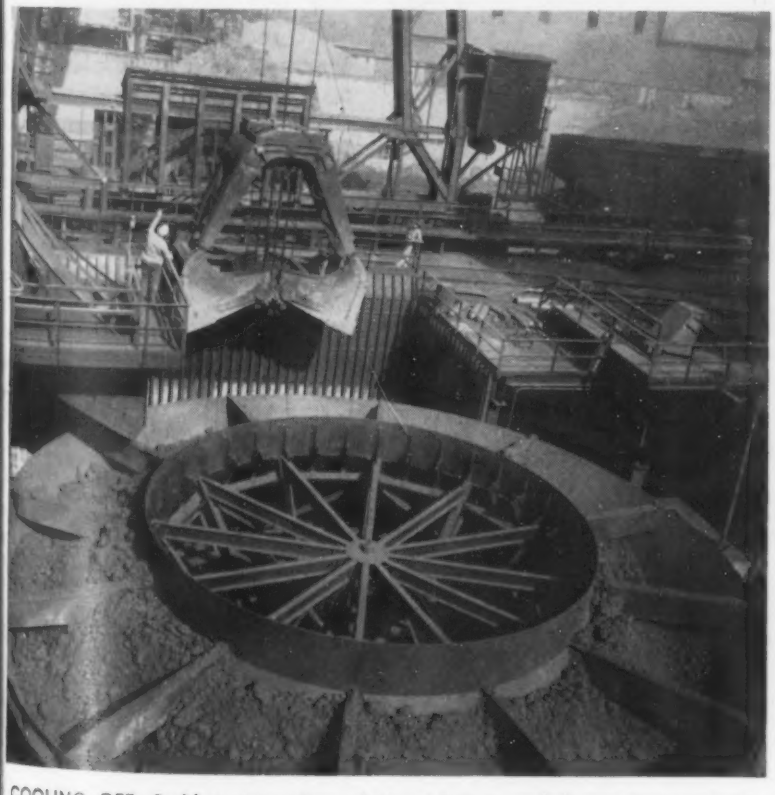
Major sintering plants and their annual capacities (net tons) include:

U. S. Steel Co., Gary 1,148,200; S. Chicago 520,100; Carrie Furnaces and Edgar Thomson 416,100 each; Ohio Works 245,700; Duquesne Works 383,000. American Steel & Wire Co., Donora, Pa., 98,500. National Tube Co., Lorain 328,000; McKeesport 260,000. Geneva Steel Co., 874,400. Tennessee Coal, Iron, and Railroad 1,283,000. Oliver Iron Mining Co., 365,000 (nominal).

Jones & Laughlin Steel Corp., Aliquippa 600,000; Pittsburgh 547,500. Kaiser Co., Fontana, 547,000. Bethlehem Steel Corp., Lackawanna 1,000,000; Bethlehem, Pa. 2,100,000; at Sparrows Point a 1,000,000 ton plant is under construction. Inland Steel Co., Indiana Harbor 665,000.

Republic Steel Corp., Youngstown 392,000; Warren 392,000; Canton 84,000; Massillon 45,000; Cleveland 410,000; S. Chicago 392,000; Birmingham 196,000. Youngstown Sheet & Tube Co., Youngstown 720,000; Indiana Harbor 480,000. Wheeling Steel Co., Steubenville 470,000. Valencia Iron and Chemical Corp., Rusk, Texas 90,000.

Armco Steel Corp., Middletown 510,000; Ashland 15,000. Sharon Steel Corp., Farrell, Pa., 120,000. Colorado Fuel and Iron Corp., Pueblo, Colo., 600,000. Crucible Steel Co., Midland 60,000. Pittsburgh Steel Co., Monessen 120,000. Ford Motor Co., 130,000. Alan Wood Steel Co., Swedeland, Pa., 400,000. Great Lakes Steel Corp., 312,000. Weirton Steel Co., 80,640. Lone Star Steel Co., 330,000.



COOLING OFF: Red-hot sinter from chute at left is cooled enough in one trip around this circular hopper to be dumped at storage pit at rear. This plant is at U. S. Steel's Edgar Thomson Works.

FTC Makes Price Peace Official

Federal Trade Commission has officially closed the books on its pricing case against American Iron & Steel Institute and 90 steel producers.

Settlement agreed upon by government and industry attorneys includes FTC findings, conclusions, cease-order, and agreement not to appeal to the courts.

While AISI and the industry do not admit to the charges in the complaint, or to the findings of the FTC, they agree not to contest them.

FTC maintains that it is not acting to prohibit or interfere with delivered pricing or freight absorption as such when innocently and independently pursued, regularly or otherwise, with the result of promoting competition.

TRANSPORT—Inflation Gathers Momentum

Truckers, maybe barge lines, will follow rails in raising rates . . . Higher steel prices more probable when wage demands are met . . . More zip to inflation whirl—*By John Delaney.*

Truckers and possibly barge lines jacking up their transportation rates in the wake of higher freight rates granted to railroads may add momentum to the inflation whirl that steel producers and consumers must weather. (THE IRON AGE, Aug. 16, 1951, p. 121.)

The Assn. of Steel Transporters met in Cleveland recently to put on record what they want new truck rates to be. They moved to increase rates on 20,000 lb minimum loads by 9 pct, effective Nov. 15. Thus 20,000 lb truck rates will be on a parity with rail freight rates of 40,000 lb.

The truckers also proposed a 5 pct increase on the 32,000 lb minimum load, bringing this to a parity of 10 pct above rail freight rates of 80,000 lb.

The latest rail boost means that cost of producing a ton of finished steel this year will have gone up 65¢ to 85¢ on a national basis. In the East, added costs are higher still. Computing this at the current rate of shipments, steel producers will have an extra costs bill of between $45 million and $60 million.

The steel consumer will be hit even harder. His added cost will be in the neighborhood of 70 to 90¢ per ton. Railroads notified the Interstate Commerce Commission they expect freight rate increases to be effective on Aug. 28.

Barge Line Hike?—Less likely, but still a possibility, is an increase in barge line rates. The barge lines are inclined to hold the line on rates, being content to settle for a modest return while volume continues high. Should shipping volume drop off, then they might revise their thinking.

Rising transportation costs make more certain the probability of steel price increases when the industry settles the expected demand of steel labor for a wage hike later this year.

STEEL PRODUCTION (Ingots and Steel for Castings)

As Reported to the American Iron & Steel Institute

	Openhearth		Bessemer		Electric		Total			
1950	Net Tons	Pct Cap.	Net Tons	Pct Cap.	Net Tons	Pct Cap.	Net Tons	Pct Cap.	Calculated Net Tons Weekly	No. Weeks in Month
1st 6 Mos.	42,175,530	97.7	2,152,402	78.3	2,846,680	83.5	47,174,592	95.7	1,823,525	25.87
July	7,224,306	97.0	380,317	79.8	478,299	79.7	8,082,922	94.8	1,828,715	4.42
August	7,318,908	98.0	405,118	84.8	518,148	86.1	8,242,174	96.5	1,860,536	4.43
September	7,262,359	100.7	409,216	88.7	533,422	91.7	8,204,997	99.4	1,917,055	4.28
3rd Qtr.	21,805,573	98.6	1,194,651	84.4	1,529,869	85.8	24,530,093	96.9	1,868,248	13.13
9 Mos.	63,981,103	98.0	3,347,053	80.4	4,376,529	84.3	71,704,685	96.1	1,838,582	39.00
October	7,734,714	103.6	436,835	91.5	581,137	96.6	8,752,686	102.4	1,975,776	4.43
November	7,111,829	98.4	370,659	80.1	540,905	92.8	8,023,393	97.0	1,870,255	4.29
December	7,434,863	99.8	380,011	79.8	540,437	90.0	8,355,311	98.0	1,890,342	4.42
4th Qtr.	22,281,406	100.6	1,187,505	83.8	1,662,479	93.1	25,131,390	99.2	1,912,587	13.14
2nd 6 Mos.	44,086,979	99.6	2,382,156	84.1	3,192,348	89.4	49,661,483	98.0	1,890,426	26.27
Total	86,262,509	98.7	4,534,558	81.3	6,039,008	86.5	96,836,075	96.9	1,857,232	52.14
1951[2]										
January	7,844,982	101.4	431,725	90.4	566,460	88.3	8,843,167	99.9	1,996,200	4.43
February	6,935,512	99.3	328,112	75.6	504,077	87.0	7,765,701	97.1	1,941,425	4.00
March	8,059,625	104.2	408,926	85.6	602,504	93.9	9,071,055	102.4	2,047,612	4.43
1st Qtr.	22,840,119	101.7	1,166,763	84.2	1,673,041	89.8	25,679,923	99.9	1,996,884	12.86
April	7,857,161	104.9	392,472	84.9	590,888	95.1	8,840,521	103.1	2,060,728	4.29
May	8,071,270	104.3	408,650	85.6	614,579	95.7	9,094,499	102.7	2,052,934	4.43
June[1]	7,667,811	102.3	403,001	87.1	586,148	94.3	8,656,960	100.9	2,017,939	4.29
2nd Qtr.[1]	23,596,242	103.9	1,204,123	85.9	1,791,615	95.0	26,591,980	102.2	2,043,965	13.01
1st 6 Mos.[1]	46,436,361	102.8	2,370,886	85.0	3,464,656	92.4	52,271,903	101.1	2,020,561	25.87
July[2]	7,710,000	99.9	412,000	86.5	574,000	89.6	8,696,000	98.4	1,967,000	4.42

Note—The percentages of capacity operated are calculated on weekly capacities of 1,746,337 net tons open hearth, 107,806 net tons Bessemer and 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of January 1, 1951 as follows: Open hearth 91,054,020 net tons, Bessemer 5,621,000 net tons, Electric 7,554,630 net tons, total 104,229,650 net tons.

[1] Revised. [2] Preliminary figures, subject to revision.

The Interstate Commerce Commission gave railroads a 9 pct hike in the East and 6 pct in the South and West. This includes the interim boost of 4 and 2 pct, respectively, last April. Increases on iron ore, anthracite, bituminous coal, and coke were held to 6 pct regardless of territory.

Ready Mullins Extrusion Plant To Put Squeeze on Steel for Shells

Transformation of a Liberty Ohio, warehouse into a cold extrusion plant has almost been completed by Mullins Mfg. Co. and mass production of war shells lies in the near future.

Heavy machinery is now being set up, a new powerhouse and plant addition is being constructed. When finished the $1 million plant will have five production lines occupying some 142,000 sq ft of floor space. Two lines will be the first to run. Their huge hydraulic presses will force steel "slugs" through dies so that it flows like plastic under the tremendous pressure. (THE IRON AGE, Oct. 19, 1950, p. 64.)

At the main Mullins plant at Warren, Ohio, pilot plant operations produced about 50,000 shells that were more uniform, needed less machining, and saved steel. Now Mullins is wrapped up in better than $20 million worth of Army and Navy contracts.

The two first-to-start production lines at Liberty will employ about 300 workers. All five lines will need about 620 employees per shift. Maximum employment for three shifts can reach 1750—to develop a full head of production steam. Mullins officials are confident that cold extrusion of steel can be adapted to civilian output later.

Power Revenues Climb

Federal Power Commission reports June electric operating revenues of larger privately-owned electric utilities as $421,769,000—a 9.6 pct gain over the $384,989,000 reported for June 1950.

INDUSTRIAL BRIEFS

For Defense Production—Within the next 12 months, BUICK MOTOR DIV. expects to have more than 4 million sq ft of floor space devoted to defense production. Currently Buick has made available for defense work 1.2 million sq ft of floor space previously devoted to automobile output.

Acquisition—KEYSTONE DRILLER CO., Beaver Falls, Pa., has bought the cable tool drilling machinery business of Dresser Equipment Co., Columbus, Ohio. The purchase is part of a program of modernization and expansion of Keystone's line of spudding machines.

New Headquarters — KENNARD & DRAKE has established new headquarters at 3364 14th St., Los Angeles. The company, consulting engineers, chemists and metallurgists, is doing development work on control of stack emissions from foundries.

On Order—GULF, MOBILE & OHIO RAILROAD has ordered 250 new-type hopper cars from the Bessemer plant of Pullman-Standard Car Mfg. Co., to cost $2.4 million. The cars will be used to transport iron ore from the Tennessee Coal, Iron & Railroad Co.'s ocean terminal in Mobile to its Birmingham district plants.

Safety Certificates—Five coal mines and seven iron ore mines of TENNESSEE COAL, IRON & RAILROAD CO. have been awarded Joseph A. Holmes Safety Assn. certificates of honor for operating 35,580,124 continuous man hr during the past 3 years without fatal accidents.

Oxygen Plant — BLAW-KNOX CO., Pittsburgh, will furnish an oxygen plant for Houston Oxygen Co., at Houston. The plant will produce 18 tons of liquid oxygen of 99.7 pct purity per day; 10,000 cubic ft per day of argon of 99.9 pct purity and some nitrogen of high purity.

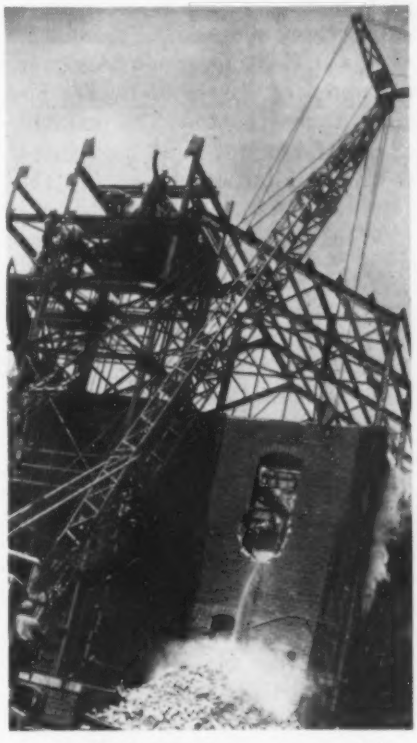
Changes Address—The executive and advertising offices of PICKER X-RAY CORP. have been moved to 25 South Broadway, White Plains, N. Y.

Warehouse Expansion—A new 100 x 201 ft warehouse providing expanded facilities for servicing the Pacific Northwest is now being constructed for CHAIN BELT CO. in Portland, Ore.

To Design and Engineer — RUST FURNACE CO., Pittsburgh, will design and engineer two continuous slab heating furnaces and a rotary hearth furnace for the Fiat plant of the Societe Des Automobiles at Torino, Italy. With a capacity of 25 metric tons per hr, the slab heaters will serve a strip mill. The rotary hearth furnace with a capacity of 11 metric tons per hr will serve a piercing mill.

Foundry Movie—A 30-min., full-color, 16mm, sound, motion picture dealing with foundry core making and entitled "The ADM of Cores" has been completed by ARCHER-DANIELS-MIDLAND CO., Foundry Products Div. Prints may be obtained without cost. Write to the company at 2191 West 110th St., Cleveland.

Overhauls Thunder Jets — K.L.M. Royal Dutch Airlines have been commissioned to overhaul all engines of the Thunder Jet, single engine jet fighters of American manufacture being used by the air forces of the Atlantic Pact countries. The work, in consultation with the Netherlands air force, will be done at Schiphol Airport.



DEMOLITION: Republic Steel Corp. is demolishing a building in order to make room for new steelmaking facilities. This old storage building will be replaced by a new plant containing four 275-ton open-hearths.

Getting Ready—The AC Spark Plug Div., GENERAL MOTORS CORP., Flint, Mich., are preparing to tool up and install the necessary manufacturing equipment to get into production of Gyroscopic Gunsights for the U. S. Air Force.

To Move—GRISCOM-RUSSELL CO. is moving its general offices from New York City to Massillon, Ohio, where the company's plant for manufacturing heat transfer apparatus of all types is located. The New York office will be a sales office.

Rolling Mills Ordered—Mesta Machine Co., Pittsburgh, has been awarded contracts for four major rolling mills for Fairless Works of U. S. STEEL CO., at Morrisville, Pa. These units are in addition to the contract for an 80-in. hot strip mill.

Modernization Contract—STANDARD STEEL CORP., Los Angeles, has been awarded a contract by Standard Slag Co., Gabbs, Nev., for the modernization of a cement kiln originally installed at Beatty. The kiln will be completely redesigned and a new 48-ft kiln section added. An interesting aspect of this project is that the kiln was disassembled in the field and a 16-ft section shipped to Los Angeles where the 48-ft section will be added.

Test Runs—Successful test runs were made of the first pilot model of the Navy and Marine Corps newest LVT, Landing Vehicle Tracked, built at Kalamazoo, Mich., by Ingersoll Products Div., BORG-WARNER CORP. More testing will be done by the Navy, Marine Corps, and Ingersoll.

Science and Research—AMERICAN CYANAMID CO., Watertown, Mass., has signed two non-profit contracts with the Atomic Energy Commission, one calling for extensive research to find new ways of recovering uranium from various ores and the other for operation of a plant to recover nuclear fuel from used reactor fuel elements.

Buys Business—Pacific Fittings Div., GENERAL METALS CORP. will greatly expand its line of malleable iron pipe fittings through its recent acquisition of the fittings business of Pittsburgh Valve & Fittings Corp., Barberton, Ohio.

UNIVERSITY OF MICHIGAN LIBRARIES

PRICE CONTROLS—Is OPS Stalling for Time?

Agency denies delaying tactics to wriggle clear of Capehart amendment . . . It extends dates of price controls for machinery, other goods . . . States its case—*By Ray Stroupe.*

Office of Price Stabilization has extended for an indefinite period the effective dates of its proposed price-control orders applying to machinery and other manufactured goods. By doing this it faces charges of stalling for time to wriggle clear of congressional obstacles.

Federal price specialists say they are having a tougher time writing regulations to permit the price rises authorized by the Capehart amendment to the Defense Production Act than they did in drafting the basic manufacturing price-control orders.

Under the Capehart provision, OPS must allow ceiling prices to reflect nearly all cost increases sustained by manufacturers up to July 26.

Who's Stalling? — OPS denies that it is stalling for time in order to find ways of bypassing the intent of the Capehart amendment. But some price experts predict unofficially that the relief orders may not be issued until late September or early October.

The agency had originally set Aug. 13 as the deadline for practically all of its manufacturing price orders. It said it expected to implement the Capehart amendment before this date. But officials later reported they could not meet the target date because of "confusion" within the agency over attempts to determine just what the amendment provided in such instances as fixing a base date for computing costs.

Despite the delay of the effective dates, however, manufacturers are free to elect coverage under their pertinent regulations at any time. Those pricing under CPR 30 (machinery) and CPR 22 (manufactured products) had been warned that if they intend to put increased prices into effect under these regulations, they must also institute any rollbacks ordered in the directives.

What OPS intends by the delay, one official says, is to prevent a manufacturer from having to sell under a new price list when he does not know his own position regarding higher production costs.

Price Relief Granted To Aluminum Ingot Flood Victims

Some producers of secondary aluminum ingot in flood-damaged areas of Kansas and Missouri will find relief in Office of Price Stabilization authorization to make deliveries at prices allowed in the General Ceiling Price Regulation, instead of the lower ceiling set in Ceiling Price Reg. 54.

In order to qualify, producers must certify that production was disrupted by forces of nature beyond their control. The amount of relief granted will be limited to the smaller of these: (1) the quantity of ingot which would have been delivered in the July 13-Aug. 13 period, barring interrupted output, or (2) the quantity required to complete contracts entered into before June 29 and not completed by July 13. The relief authorization is contained in Supplementary Reg. 1 to CPR 54.

"Sen. Abercombrie is going to visit the plant today. Wipe those smiles off your faces and moan about controls!"

New Acceptance Scheme for CMP

Steel mills have been notified by National Production Authority they may now take or reject CMP orders without regard to the date received until within 15 days of expiration of established lead times. But during this final 15-day period, orders would have to go back on the first-come, first-served basis.

This order, which is aimed at permitting mills to take a larger share of orders from established customers, is to be made official through revision of existing M-1.

The government has been prodded into this revision by industry which has protested that existing chronological acceptance procedure often results in waste and confusion.

Industry Controls This Week:

NPA Orders

M-80—Ferro alloying materials and products, central order puts 14 materials, products under centralized control. Six of 14 are under complete allocation. Eff. Aug. 15.

M-81—Pure tungsten, pure molybdenum, allocation order. Eff. Aug. 15.

M-46A—Priority system to help companies get materials for foreign operations. To be administered cooperatively with ECA, OIT, PAD.

OPS Orders

Rev. 1, Suppl. Reg. 2, CPR 30—Machine tool makers can increase base period prices 12 pct. Permits inclusion in base period prices, of labor and material costs between end of base period and Sept. 10. Eff. Aug. 27.

Supply Reg. 1, CPR 54 — Some makers of secondary aluminum ingot caught in flood may apply for right to sell above ceiling.

MACHINE TOOLS—Finally Grant Pricing Relief

OPS order permits manufacturers to raise base period prices 12 pct when determining ceiling prices . . . They may include many labor, cost increases . . . Order encourages subcontracts.

Pricing relief for machine tool builders seems to have risen out of the Washington quicksand of inaction and stalling this week. Problems of the builders became a popular Capitol shuffleboard game but finally a pricing order was issued to put machine tool production on the double.

Defense prime contractors know the action is belated. The shortage of machine tools had damaged production mobilization before Office of Price Stabilization shook off inertia and Congressional impediments to act. Another prod was Defense Mobilizer Charles E. Wilson's edict that OPS do something about machine tools—not tomorrow but right away.

Manufacturers of machine tools will be able, when determining ceiling prices, to increase their base period prices 12 pct in conforming to an altered Office of Price Stabilization policy. Aug. 27 has been set as the effective date of this order, designated as Revision 1 to Supplementary Reg. 2 under Ceiling Price Reg. 30.

The revision permits manufacturers to include, in their base period prices, many labor and material cost increases between the end of their base period and Sept. 10, 1951.

Retained in the revised regulation is authorization to reflect increased costs resulting from greater use of overtime and shift premium hours, as well as increased subcontracting actions. A toolbuilder will be required to make refunds on over-estimates of greater subcontracting costs within 4 months after he completes 1 year's experience.

Avoiding Refund—However, the manufacturer can calculate greater costs based on increased subcontracting recorded during his actual building experience. If he follows this procedure, no refund is required.

Higher costs for overtime and shift premium hours may be shown in revised ceiling prices by modifying the method of computing labor cost adjustments under CPR 30. Prices are to be redetermined periodically to include permissible increases.

Action taken by OPS to liberalize pricing policies is part of a three-part program ordered by Mobilizer Charles E. Wilson to permit rapid expansion of machine tool production. Other sections include granting of super-priorities on needed materials and finished tools, and guaranteeing of plentiful labor supply.

Wilson insists that "every possible fair incentive" is being brought into the effort to boost machine tool production. He describes the current shortage of the items as a "perfectly natural situation" because of the sharply-increased demand, and praises industry for the job it has done thus far.

In the past 14 months, Wilson points out, output of machine tools had tripled. He forecast a growth similar to that immediately preceding U. S. entry into World War II, when production doubled and redoubled.

A Friend in Need

The American Society of Tool Engineers has started a program to help machine tool manufacturers with subcontracting. Through its 19,000 engineers employed in manufacturing plants and 93 chapters, ASTE is attempting to locate manufacturers with the capacity and ability to produce either machine tools or components.

Communications have already been received by the society from manufacturers seeking subcontracts, according to Harry E. Conrad, ASTE executive secretary. Conrad said a study of available facilities is being made at ASTE headquarters. Final analysis of the ability of a plant to produce specific machine tools and parts must necessarily be left to the individual contractor, he explained.

Alloys Under Central NPA Order

Revising and consolidating previous orders, National Production Authority put 14 ferroalloying materials and ferroalloy products under centralized control. Six of the 14 went under complete allocation.

The order (M-80 and seven schedules for specific elements) was effective Aug. 15. It requires melters and processers of the alloying materials to give NPA schedules showing percentages of each mix for steel products or other proposed processing for the month following submission of their report.

M-80 applies to: Boron, calcium, chromium, cobalt, columbium and tantalum, manganese, molybdenum, nickel, silicon, titanium, tungsten, vanadium, and zirconium. Under complete allocation are: Nickel, cobalt, columbium, tantalum, tungsten, and molybdenum.

Another new order (M-81) covers pure tungsten and pure molybdenum. It has the same effective date. These new regulations supersede all other NPA orders pertaining to the alloying materials.

Tailored Wire, Cable Order?

Members of the Wire and Cable Industry Advisory Committee are hoping to get action soon by Office of Price Stabilization on a specific ceiling price regulation for their industry.

Industry representatives have pointed out to OPS officials the serious price squeezes being experienced by producers under the General Ceiling Price Regulation.

Terms of the proposed regulation would cover sales at the producer level.

ARMS—Help to Future Subcontracting

Stimulus will take effect later . . . Military knows what it wants . . . Good part of defense dollar will go to planes . . . Army puts M-47 tank, amphibious cargo carrier on must list.

The flow of subcontracts to smaller industry will be stimulated in the future by growing purchases of arms. The longest stride in defense production is yet to come and military spending is entering the heavy phase.

At last military men are through talking intangibles. The prices they quote are fancy ones but now they have set their goals on quantities and types of jet planes, tanks, guns, and vehicles.

Bigger Spending—Spending for defense is entering its heavy phase. Greatest procurement obligation entered into by Dept. of Defense branches in the fiscal year ended June 30 was $27.9 billion for hard goods — including weapons, tanks, planes, and ammunition. This points out the trend to bigger future spending and was the bulk of the $35.3 billion expended for major equipment, supplies, military construction, and expansion of plants.

The era of jets has come and with it a surer realization that air supremacy is the first stepping stone to victory. Rep. Carl Vinson (D., Ga.), chairman of the House Armed Services Committee, has asked for a swift increase in the Air Force to 138 combat wings and 25 troop carrier wings. Growth to the more likely 15 wings by 1954 will cost about $3 billion dollars.

Until recently, size of ground forces was the measuring stick for size of the Air Force. A new concept for air strength is developing, a concept that sees the jet as the master.

Peace of mind at fancy prices might have been the subject of a talk given by USAF officers to a House appropriations subcommittee. The airmen gave facts and money figures on the new all-jet B-52 intercontinental bomber to replace the B-36.

Cheaper En Masse—First four models cost over $21 million each. Of that, tooling per plane cost about $12.5 million. The unit price could be lowered to about $3,800,000 if 100 planes were ordered.

One Air Force general said the cost of bombing equipment for the B-52 "will get down to about $250,000 apiece later." The high cost of bombing was further pointed out by a USAF man who itemized the bombing system.

On the ground, the Army has put the medium M-47 tank and an amphibious cargo carrier with a payload capacity of 1½ tons on its must procurement list. Ordnance men told a House committee the Army expects to obligate some $4.2 billion for tanks, tank recovery vehicles, and new armored vehicles. Other tactical vehicles are expected to cost nearly $1,269,000,000.

Lightweight Tank — The Army is also thinking of pushing up procurement of the lightweight Walker Bulldog tank. It weighs 25 tons, mounts a 76mm gun, and has an improved fire control system for surer marksmanship while jolting around. Subcontracting work in the tank business may be held back for some time while the program shapes up.

June Finished Steel Shipments

As Reported to the American Iron & Steel Institute

STEEL PRODUCTS	CURRENT MONTH					TO DATE THIS YEAR				
	Carbon	Alloy	Stainless	Total	Pct of Total Shipments	Carbon	Alloy	Stainless	Total	Pct of Total Shipments
Ingots	97,902	18,501	1,557	117,960	1.8	483,660	*119,551	10,353	*613,564	1.5
Blooms, slabs, billets, tube rounds, sheet bars, etc.	119,962	52,641	1,588	174,191	2.6	*807,646	*283,797	9,096	*1,100,539	2.7
Skelp	13,869			13,869	0.2	69,074			69,074	0.2
Wire rods	75,347	996	293	76,636	1.2	432,739	9,615	2,269	444,623	1.1
Structural Shapes (heavy)	403,313	5,463		408,776	6.1	2,425,272	39,803	47	2,465,122	6.2
Steel piling	34,600			34,600	0.5	200,103			200,103	0.5
Plates	649,199	34,194	1,595	684,988	10.3	*3,664,625	*214,650	9,325	3,888,600	9.7
Rails—Standard (over 60 lbs.)	153,882	18		153,900	2.3	855,923	114		856,037	2.1
Rails—All other	7,565	5		7,570	0.1	67,203	37		67,240	0.2
Joint bars	11,942			11,942	0.2	69,476			69,476	0.2
Tie plates	37,481			37,481	0.6	234,037			234,037	0.6
Track spikes	14,253			14,253	0.2	85,273			85,273	0.2
Wheels (rolled & forged)	31,762	83		31,845	0.5	199,328	123		199,451	0.5
Axles	20,228	54		20,282	0.3	114,672	295		114,967	0.3
Bars—Hot rolled (incl. light shapes)	533,854	196,186	3,721	733,761	11.0	*3,301,150	*1,139,052	20,995	4,461,197	11.2
Bars—Reinforcing	151,984			151,984	2.3	918,881			918,881	2.3
Bars—Cold finished	140,627	28,203	3,340	172,170	2.6	774,116	168,112	21,033	963,261	2.4
Bars—Tool steel	2,884	11,514		14,398	0.2	*16,610	*67,415		*84,025	0.2
Standard pipe	233,032	120	3	233,155	3.5	1,464,608	843	26	1,465,477	3.7
Oil country goods	147,653	20,185		167,838	2.5	830,988	113,282		944,270	2.4
Line pipe	258,298	62		258,360	3.9	1,491,368	669		1,492,037	3.7
Mechanical tubing	59,781	26,643	644	87,068	1.3	340,043	148,651	3,272	491,966	1.2
Pressure tubing	20,700	1,823	868	23,391	0.4	129,405	10,492	5,069	144,966	0.4
Wire—Drawn	271,845	5,288	2,468	279,601	4.2	1,649,383	29,186	15,728	1,694,277	4.2
Wire—Nails & staples	72,979		2	72,981	1.1	447,979		25	448,004	1.1
Wire—Barbed & twisted	18,699			18,699	0.3	115,357		1	115,358	0.3
Wire—Wovenwirefence	34,909			34,909	0.5	225,747			225,747	0.6
Wire—Bale ties	10,093			10,093	0.2	52,404			52,404	0.1
Black plate	81,893			81,893	1.2	486,998			486,998	1.2
Tin & terne plate—Hot dipped	167,527			167,527	2.5	854,301			854,301	2.1
Tin plate—Electrolytic	257,896			257,896	3.9	1,425,811			1,425,811	3.6
Sheets—Hot rolled	641,400	25,592	3,328	670,320	10.1	*4,184,357	*164,332	20,222	*4,368,911	10.9
Sheets—Cold rolled	767,109	12,970	8,751	788,830	11.9	*4,970,858	*62,551	50,425	5,083,834	12.7
Sheets—Galvanized	176,498			176,498	2.7	*1,026,211	*907		1,027,118	2.6
Sheets—All other coated	21,750			21,750	0.3	132,220			132,220	0.3
Sheets—Enameling	14,624			14,624	0.2	106,921			106,921	0.3
Electrical sheets & strip	11,797	54,731		66,528	1.0	74,674	314,740		389,414	1.0
Strip—Hot rolled	168,995	3,339	605	172,939	2.6	*1,100,735	22,198	3,653	*1,126,586	2.8
Strip—Cold rolled	161,308	2,977	16,106	180,391	2.7	*972,808	*15,547	103,476	1,091,831	2.7
TOTAL	6,099,440	501,588	44,869	6,645,897	100.0	*36,804,944	*2,925,962	275,015	*40,005,921	100.0

During 1950 the companies included above represented 99.0% of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

* Revised.

Gas Industry May Do a Little Expanding Under Modified Curb

Gas appliance dealers affected by Petroleum Administration for Defense's recent modified order barring extension of natural gas service in 15 East and Northeast states may be able to distribute part of their inventories. The gas industry had raised a ruckus when the original order was proposed.

The order provides that natural gas sellers may take on new customers during the next 12 months to the extent of 1 pct of the total number of all their customers on the effective date of the order's issuance, Aug. 22.

Orderly Expansion—Two other special provisions specify that:

(1) In a community without previous gas distribution or with fewer than 5000 gas consumers, the seller may take on as many customers as he wishes during the first 2 years after distribution begins.

(2) In a community previously served with some type of gas, where conversion has been made to natural gas, the seller in the first 2 years may retail to new customers numbering up to 10 pct of the total number of all types of gas users at the time of conversion.

It was possible for those natural gas sellers who applied to PAD on or before Aug. 22 to certify that their supplies were ample and obtain suspension of the order as it applied to them.

The list of states now affected includes parts of Kentucky and West Virginia, and all of Connecticut, Delaware, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Virginia and Wisconsin.

Under provisions of the amended Defense Production Act, regulatory bodies in any of the states affected need not apply PAD's order if they can certify the distribution of natural gas under their jurisdiction is being handled properly.

Mobilizer Wilson Sees Larger Output of Machines, Armaments

Machine tool production, described by Defense Mobilizer Charles E. Wilson as "one of the serious bottlenecks" in defense industry, may show a 300 pct increase by mid-1952.

Wilson made this prediction in testimony before a House special subcommittee considering supplemental appropriations for fiscal 1952. Discussing other phases of the rearmament program, the mobilization chief told legislators that:

Jet engine production is "three or four times what it was a year ago," and progress is being made toward a goal of 18,000 jet powerplants per month.

More Gains Seen—Based on current deliveries and on man hours used in the industry, aircraft production made an estimated gain of about 50 pct during the first 7 months of 1951. A further gain of 70 to 80 pct is expected by the year's end.

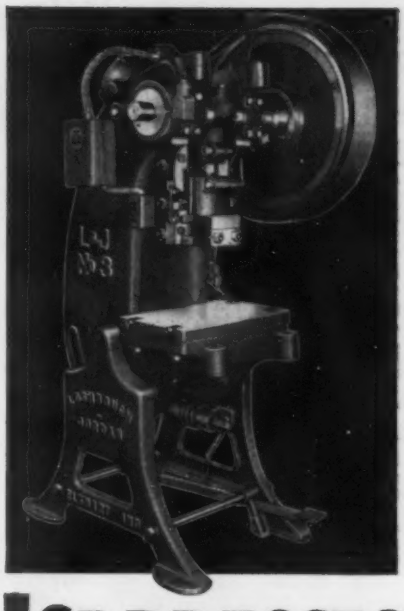
Production of tanks has risen nearly 200 pct since the first of January. Another 400 pct increase is predicted by 1952.

There has been a three-fold jump in the output of electronic equipment, and a similar increase is planned for the last half of this year.

On an over-all basis, Wilson said, "reasonable progress" is being made in improving the nation's military and economic strength. He added that fulfillment of mobilization plans "is very much dependent" upon the ability to get more of the rare strategic materials and of copper, aluminum, and steel.

Await Special Oil Price Controls

Pricing rules established by Office of Price Stabilization's Ceiling Price Reg. 63 will apply to wholesale sales of stock and industrial lubricating oils and related petroleum products until dollars-and-cents orders are worked out in Washington.



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It's the speed, accuracy and dependability of L & J Presses that enable them to produce low-cost stampings and drawings. You will find that this efficiency can be profitably utilized in the manufacture of a wide variety of parts.

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L&J O.B.I. Presses are made in 12 models—back geared and plain flywheel types—with capacities from 6 to 80 tons.

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SPECIFICATIONS

No. 3 Plain Flywheel Press
(Illustrated)

22-Ton Capacity
2½" Standard Stroke
120-135 Strokes per Minute
8¼" or 10¼" Die Space

(Bed to slide, stroke down, adjustment up.)

L&J PRESS CORP.
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Controls Digest—Continued

Will Sell Stockpile Copper To Defense Firms on Loan Basis

Defense industries will be able to buy a total of about 25,000 tons of copper from General Services Administration with the aid of allocations by NPA.

Upon authorization from President Truman, the Munitions Board will release the copper from the national stockpile.

Sale of the short-supply metal, on a loan basis, was granted at the request of Defense Mobilizer Charles E. Wilson.

An equal amount of copper must be placed in the stockpile by June 30, 1952, unless the reimbursement should prove to be not in the interest of defense.

Principal factor in the shortage of copper for defense production according to Wilson, was the strike at the Garfield, Utah, plant of American Smelting & Refining Co. The workers are back on the job, pending study of their case by the wage stabilization board, but the strike is said to have caused an average loss of about 10,000 tons of copper per month.

Steel Protection for Auto Makers

A change in regulations, scheduled for this week by National Production Authority, will require steel mills to reserve the former free area steel products for manufacturers of consumer durables and automobiles. This is necessary to make sure that these groups will get the steel earmarked for them during the transition to a closed CMP.

Where to Get Wage Forms

Official government forms to be used in applying for all types of wage adjustments are now available at the 76 field offices of the Wage & Hour Div., U. S. Labor Dept. Use of the official form is mandatory after Aug. 27.

Wage Raises for Shortage

Defense Mobilizer Wilson has decided to allow special pay raises in labor-shortage situations.

Such increases will be permitted only in unusual cases, Wilson emphasizes. His instructions to the Wage Stabilization Board authorize "preferential treatment" of government requests for over ceiling wage increases where manpower shortages are retarding production, such as in the machine tool industry. Each case will be decided on its own merits, Wilson maintains.

Tool and die men and machine tool builders who have lost skilled workers to new defense industries because their wage rates were under controls may now have the chance to woo back some of their strays.

New Applications for Simpler Reporting Will be Issued by PAD

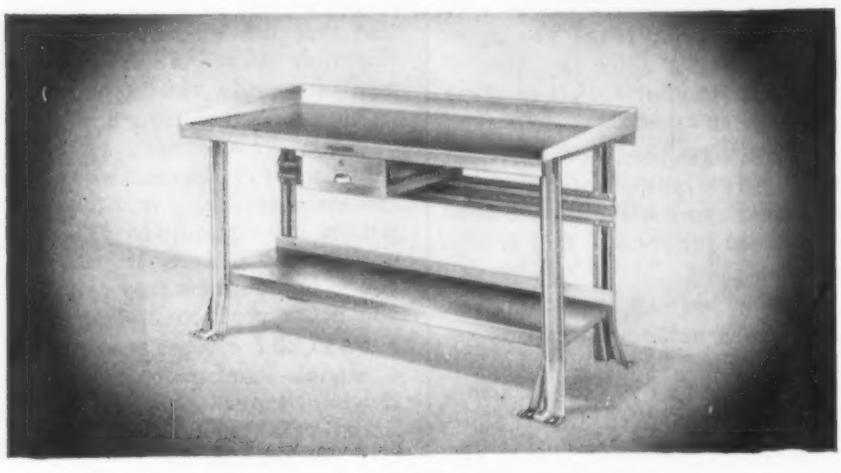
Samples of new application forms promised by Petroleum Administration for Defense to oil-well drilling firms in search of tubular goods will soon be mailed to operators.

Four forms, designated as PAD-15, -16, -17, and -17DP, were redesigned in an effort to simplify reporting of information in requests for casing and tubing.

PAD-15 "will provide for a clearer explanation of the specific well location involved and previous exploratory work" in the area of wildcat wells.

PAD-16, used to report the inventory of unused casing and tubing on hand at a given date, requires the operator's drilling history for the four quarters immediately preceding the quarter when the application is presented. The old form called for drilling history in 1950.

PAD-17, filed quarterly to show the operator's scheduled requirements for casing and tubing, has undergone only one major change —inclusion of space for reporting tonnages of tubular goods needed to maintain and repair existing wells.



THE HALLOWELL WORK BENCH OF STEEL

Standardized, ready-made HALLOWELL Work Benches save trouble and expense of "building your own"; provide superior equipment for maximum productivity.

Interchangeable units readily adaptable to individual requirement. Easily bolted together to form continuous bench, yet may be taken down and reassembled as single units. Rigid, heavy-duty construction eliminates bolting to the floor, minimizes installation and maintenance.

HALLOWELL Work Benches do credit to any plant. Functional design and attractive appearance encourages better plant housekeeping and worker performance.

Full details in Bulletin 701.

SHOP EQUIPMENT HALLOWELL OF STEEL

Ready-Made, Standardized

SPS STANDARD PRESSED STEEL CO.

JENKINTOWN 17, PENNSYLVANIA

Small Business Share of War Contracts Up—Dollar Volume Dips

Show gains in advertised bid contracts and in negotiated awards.

In April, 1951, business firms with fewer than 500 employees got three of five military contracts awarded on an advertised bid basis, members of the House Special Subcommittee on Emergency Defense Appropriations were told recently. The value of these contracts was $71,082,000.

Figures were supplied to the legislators during hearings on supplemental appropriations, by Office of Defense Mobilization officials, including Defense Mobilizer Charles E. Wilson.

Small business gained increasing percentages of advertised-bid contracts between January and April, the tabulation showed. By month, the figures were: January, 33.9 pct; February, 38.2 pct; March, 56.7 pct; and April, 60.4 pct.

However, the dollar value of the awards *decreased* as the percentage of contracts went up.

Real Gains—Large gains were recorded by small businesses in the negotiated contract field, in both percentage of contracts signed and the total dollar value. Between January and April of this year, the value of these contracts signed by small firms rose from $452,971,000 to $735,484,000.

During the same time, the percentage of contracts signed climbed in the following stages, beginning with 13.5 pct in January; February, 19.9; March, 24.4; and April, 26.9.

Speaking later to the same subcommittee, Defense Production Administrator Manly Fleischmann said he did not believe the cost increase in awarding a fair share of military contracts to smaller firms was very large. Fleischmann added, "I think there is so much advantage to the American competitive system in keeping small firms operating with some profit during what may be a very long period."

MISSION for Mass Production

Forming tank halves on a Clearing press at Lockheed.

To extend the range of jet fighters, wing fuel tanks have been developed to be dropped when empty. Two tanks are lost on every flight, so quantity production at low cost is imperative. Lockheed Aircraft Corporation turned to Clearing for a special hydraulic press to solve this problem. These expendable tanks are now being produced as required.

Providing the means to produce large quantities of metal items at low unit cost has been Clearing's chief concern since the company was founded. Parts even larger than shown here, and other parts tiny by comparison, are being turned out economically on Clearing presses today. It will pay you to consult Clearing with your problems.

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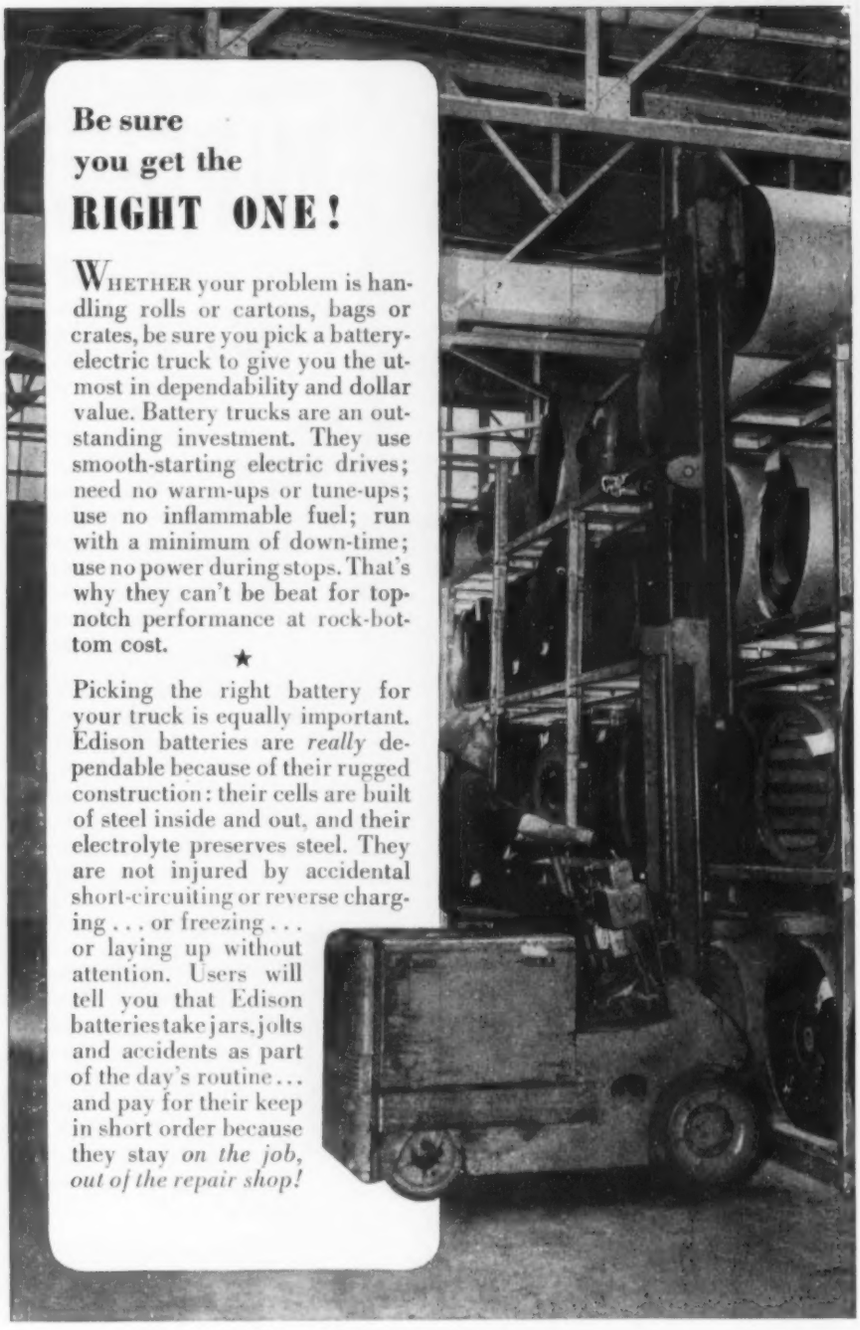
CLEARING PRESSES
THE WAY TO EFFICIENT MASS PRODUCTION



Be sure you get the

RIGHT ONE!

WHETHER your problem is handling rolls or cartons, bags or crates, be sure you pick a battery-electric truck to give you the utmost in dependability and dollar value. Battery trucks are an outstanding investment. They use smooth-starting electric drives; need no warm-ups or tune-ups; use no inflammable fuel; run with a minimum of down-time; use no power during stops. That's why they can't be beat for top-notch performance at rock-bottom cost.

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Picking the right battery for your truck is equally important. Edison batteries are *really* dependable because of their rugged construction: their cells are built of steel inside and out, and their electrolyte preserves steel. They are not injured by accidental short-circuiting or reverse charging . . . or freezing . . . or laying up without attention. Users will tell you that Edison batteries take jars, jolts and accidents as part of the day's routine . . . and pay for their keep in short order because they stay *on the job, out of the repair shop!*

WRITE TODAY for free booklet SB 2039 and a current price quotation. You'll find Edisons cost little more than other makes of batteries . . . and they pay this back over and over in terms of low upkeep and long, long life.—*Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey. In Canada, International Equipment Company, Ltd., Montreal and Toronto.*

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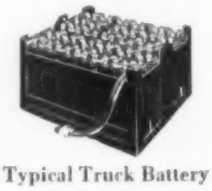
STORAGE BATTERIES



Typical Truck Battery

Continued

Priority System to Help Get Materials for Overseas Oil Deals

A priority system set up by National Production Authority will assist oil companies in getting materials for foreign operations. It will be administered cooperatively under M-46A by the Petroleum Administration for Defense, Office of International Trade, and the Economic Cooperation Administration.

This is another move by the government to offset the loss of Iranian oil, estimated at about 460,000 bbl daily in refined products.

A few days earlier, NPA had approved a "plan of action" drafted by the PAD by which 19 oil companies would in effect pool their equipment and resources for common use "without regard to ownership."

The companies were already operating under a somewhat similar voluntary agreement. They are immune under the plan from anti-trust prosecution by reason of a provision in the Defense Production Act.

Plan 'Subcontracting' Show For Atlanta, Ga., on Sept. 10-12

Small business will get another chance to scan blueprints and talk to agents of prime contractors to learn what their future role in subcontracting may be. Holders of prime military contracts will display their products at a joint Armed Forces exhibit in Atlanta, Ga., on Sept. 10 to 12.

Much of the experience gained at previous "subcontracting" shows will be put to use.

The Armed Forces Regional Council for Georgia, South Carolina, Florida, Alabama, Mississippi, and Tennessee is organizing the exhibit. Cooperating agencies include local chambers of commerce and industrial groups.

Acting chairman for the September exhibit is Capt. Donald T. Giles, Inspector of Naval Material, 770 Spring Street, N. W., Atlanta.

Fast Tax Write-Offs

172 certificates
issued by DPA during
Aug. 3-10
totaling $234,771,928
3179 authorized to date
totaling $8,883,154,415

Latest DPA certificates listed by company, use, amount applied for, amount eligible, and pct approved.

General Electric Co., Bridgeport, Conn., electronic equip., $161,732, $131,700, 75.

Fenwal, Inc., Ashland, Mass., fire detector, $106,436, $63,582, 80.

Brunette Tool Co., Inc., New Britain, Conn., cutting tools, $56,391, $56,391, 75.

New England High Carbon Wire Co., Millbury, Mass., wire, $427,968, $424,598, 60.

American Bosch Corp., Springfield, Mass., fuel controls (aircraft), $457,544, $434,453, 80.

Transducer Corp., Boston, Mass., electronic equipment, $20,974, $11,177, 75.

J. W. Greer Co., Wilmington, Mass., tank components, $2,000,000, $1,350,000, 75.

The Allison Co., Bridgeport, Conn., abrasive wheels, $87,672, $87,672, 80.

Bard Parker Co., Inc., Danbury, Conn., aircraft parts, $16,843, $16,843, 75.

Porter Forge & Furnace, Inc., Somerville, Mass., metal forgings, $34,064, $7,756, 75.

Edmunds Mfg. Co., W. Hartford, Conn., aircraft parts, $11,916, $8,552, 75.

Norton Co., Worcester, Mass., alundum abrasive, $241,500, $226,100, 75.

Norton Co., Worcester, Mass., grinding wheels, $550,000, $520,800, 75.

Lewis-Shepard Co., Watertown, Mass., electric & fork trucks, power hand trucks, $143,000, 141,000, 80.

Moore Drop Forging Co., Springfield, Mass., drop forgings, $46,750, $46,750, 75.

Vahl Engineering Co., Brooklyn, New York, aircraft, $176,000, $75,048, 75.

Air Preheater Corp., Wellsville, N. Y., air preheaters, $241,162, $232,516, 80.

Phoenix Specialty Mfg. Co., Inc., Freeport N. Y., gaskets, $13,260, $13,260, 50.

Auto-Lite Battery Corp., Syracuse, N. Y., generator, $157,682, $157,682, 75.

American Car and Foundry Co., Buffalo, N. Y., products for AEC, $304,405, $186,941, 80.

K. W. Thompson Tool Co., Garden City Park, L. I., N. Y., aluminum castings, $21,218, $18,296, 75.

Riverside Metal Co., Riverside, N. J., copper alloys (sheet), $387,767, $387,767, 60.

Crucible Steel Co. of America, Syracuse, New York, steel wire, $1,012,500, $1,012,500, 60.

Frink Corp., Long Island City, N. Y., ordnance, $39,057, $39,057, 80.

Giordano Waste Material Co., Trenton, N. J., scrap iron, $59,903, $25,205, 75.

Lee Spring Co., Inc., Brooklyn, New York, mechanical springs, $19,942, $19,942, 85.

Pittsburgh Consolidation Coal Co., Courtney, Pa., coal, $1,321,126, $1,321,126, 65.

Heppenstall Co., Pittsburgh, Pa., steel ingots, gun forgings, $1,494,759, $1,478,313, 75.

Avion Instrument Corp., Paramus, N. J., fire control systems, $125,000, $63,000, 75.

C & D Batteries, Inc., Conshohocken, Pa., storage batteries, $149,866, $141,666, 75.

Budd Metal Co., Inc., Wilmington, Delaware, steel scrap, $201,912, $201,912, 75.

Bessemer & Lake Erie RR Co., Pittsburgh, (Home Office), transportation (hopper cars), $4,400,000, $4,400,000, 80.

Harrisburg Steel Corp., Harrisburg, Pa., cylinders & couplings, $75,000, $39,750, 75.

Greenville Steel Car Co., Greenville, Pa., freight cars, $666,353, $666,353, 60.

Sharon Steel Corp., Farrell, Pa., pig iron, $6,000,000, $6,000,000, 85.

Sharon Steel Corp., Farrell, Pa., rolled strip (steel), $3,700,000, $3,700,000, 60.

Standard Piezo Co., Carlisle, Pa., frequency control units, $45,000, $45,000, 75.

National Tube Co., McKeesport, Pa., ordnance products, $106,641, $61,731, 75.

National Steel Corp. (Weirton Steel Co. Div.), Weirton, West Va., barge transportation, $437,500, $300,000, 80, $137,500, 70.

Southern Metals Co., Inc., Charlotte, N. C., scrap metal, $60,000, $60,000, 75.

Bethlehem Steel Co., Sparrows Point, Md., docking ore carriers, $5,500,000, $5,500,000, 50.

BARBER COLMAN

Gear Cutters

FROM
1 3/4 D. P.

STANDARD, INVOLUTE 14½° P. A. CARRIED IN STOCK FOR QUICK DELIVERY

SPECIALS — CUTTERS FROM 1 D. P. FOR ROUGHING OR FINISHING • GANGS FOR COMBINING BOTH OPERATIONS • GROUND OR UNGROUND • STOCKING CUTTERS, STEPPED OR ALTERNATE-STEPPED TOOTH STYLE

COMPLETE GEAR CUTTING SERVICE
SEND BLUEPRINTS FOR ESTIMATES

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498 ROCK STREET
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"Just look at the pattern of Multigrip
(The reason men and trucks don't slip).
The risers give you non-skid traction,
When rush work calls
for speedy action."

U·S·S MULTIGRIP FLOOR PLATE is pleasingly symmetrical in appearance. The pattern of the risers is continuous whether adjoining plates are laid end to end, side to side, or side to end. This minimizes waste in cutting . . . keeps cost down. The scientifically-designed risers mean safety and comfort underfoot. The sloping sides of the angular-shaped risers make it impossible to catch the toe of a shoe on them.

Vehicles roll straight and true on Multigrip's flat-topped risers, too. There are no gutters to catch a narrow-tired wheel . . . wheels roll *on* the risers, not *between* them. And because there are no pockets to hold dirt, grease and water, Multigrip is easy to clean. Drainage is complete in any direction.

Get further information about Multigrip from your nearest steel warehouse or write to us direct.

United States Steel Company, Pittsburgh · Columbia Steel Company, San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham · United States Steel Export Company, New York
United States Steel Supply Company, Warehouse Distributors, Coast-to-Coast

U·S·S MULTIGRIP FLOOR PLATE 1-973

UNITED STATES STEEL

• News of Industry •

Appalachian Electric Power Co., Graham Station, West Va., electric power, $133,850, $133,850, 65.

Great Lakes Carbon Corp., Electrode Div., Morganton, N. C., graphite electrodes, $4,500,000, $4,500,000, 75.

Coplan Junk Co., Macon, Ga., processing scrap metals, $90,195, $90,195, 75.

Western Railway of Alabama, Atlanta, Ga. (Home Office), rail transportation, $253,750, $253,750, 80.

I. Miller & Son, Huntsville, Ala., scrap steel, $94,260, $80,760, 75.

Montgomery Iron & Metal Co., Montgomery, Alabama, scrap iron, $64,079, $64,079, 75.

Hatcher Iron & Metal Works, Waycross, Ga., scrap iron, $20,748, $20,748, 75.

Vickers, Inc., Detroit, pumps, $509,947, $377,436, 80.

Michigan Seamless Tube Co., South Lyon, Mich., steel tubing, $433,000, $433,000, 60.

Michigan Seamless Tube Co., South Lyon, Mich., steel tubing, $65,280, $5,416, 60.

Western Automatic Machine Screw Co., Elyria, Ohio, fuel metering equipment, $532,370, $532,370, 85.

Louisville & Nashville RR Co., Louisville, Ky. (Home Office), railroad transportation, $5,619,765, $5,021,620, 80.

Carroll Clay Co., Carrollton, Ohio, ladle brick, $75,182, $75,182, 85.

The Dow Chemical Co., Bay City, Mich., magnesium alloy, $233,200, $225,700, 75.

Le Roi Co. Cleveland Rock Drill Div., Cleveland, rock drills, $102,552, $99,907, 60.

I. H. Schlezinger & Sons Co., Columbus, Ohio, scrap iron, $28,000, $28,000, 75.

Super Tool Co., Macomb County, Mich., carbide cutting tools, $51,557, $51,557, 85.

Fisher Steel & Supply Co., Muskegon, Mich., scrap metals, $19,600, $19,600, 75.

The Sheffield Corp., Dayton, Ohio, machine tools, accessories, $1,673,584, $1,657,777, 75.

Formsprag Co., Van Dyke, Mich., clutches, $240,007, $229,957, 80.

Michigan Abrasive Co., Detroit, coated abrasives, $504,770, $504,770, 75.

U. S. Burke Machine Tool Co., Cincinnati, milling machines, $238,407, $200,157, 80.

Macomb Steel Treating Co., Detroit, hardening of metals, $61,552, $55,489, 60.

Oro Mfg. Co., Adrian, Mich., seat assemblies (aircraft), $65,252, $34,698, 80.

Harry Rock & Co., Cleveland, scrap steel, $45,974, $45,974, 75.

Michigan Scrap Iron & Metal Co., Detroit, scrap iron, $49,721, $49,721, 75.

General Motors Corp., Vandalia, Ohio, propellor assemblies, $3,299,200, $3,121,100, 75.

General Motors Corp., Pontiac, Mich., ordnance, $9,160,320, $8,710,320, 75.

General Motors Corp., Pontiac, Mich., ordnance, $7,338,600, $6,938,600, 75.

General Motors Corp., Flint, Mich., navigational computers, $6,797,250, $6,512,500, 75.

Superior Foundry, Inc., Cleveland, gray iron castings, $809,254, $809,254, 75.

Commercial Steel Treating Corp., Detroit, processing of metals, $254,982, $250,677, 60.

Tinnerman Products, Inc., Cleveland, head clips—army ordnance, $16,470, $16,470, 90.

Kearney & Trecker Corp., Wauwatosa, Wis., milling machines, $5,232,100, $5,232,100, 75.

Alloy Products Co., Marion, Ind., aircraft, $141,299, $97,037, 80.

Kaukauna Machine Corp., Kaukauna, Wis., milling machines, $592,460, $577,960, 80.

Illinois Central RR Co., Chicago (Home Office), rail transportation, $2,982,027, $2,982,027, 65.

Illinois Central Railroad Co., Chicago (Home Office), rail transportation, $235,376, $235,376, 65.

Illinois Central Railroad Co., Chicago (Home Office), rail transportation, $4,242,721, $4,242,721, 65.

Frank Foundries Corp., Moline, Ill., liners for engines, $30,000, $30,000, 90.

Elgin, Joliet & Eastern Railway Co., Chicago (Home Office), freight transportation, $6,965,000, $6,965,000, 80.

Modern Drop Forge Co., Blue Island, Ill., end plate, $276,000, $261,000, 75.

Illinois Coil Spring Co., Chicago, precision springs, $135,205, $108,265, 75.

Rheem Mfg. Co., Chicago, steel drums, $1,158,438, $172,000, 75.

Hudson-Sharp Machine Co., Green Bay, Wis., ordnance, $79,500, $65,000, 75.

Precision Machine Shop, Cicero, Ill., machine shop work, $33,483, $33,483, 80.

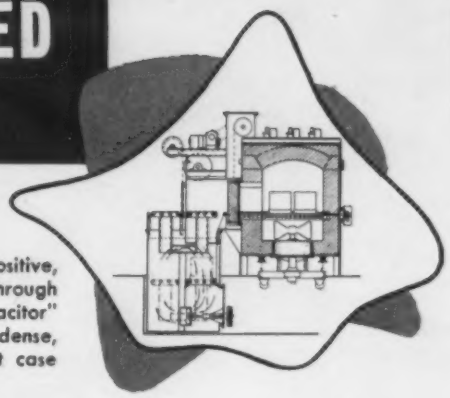
Perfex Corp., Milwaukee, Wis., pressure transmitters, $65,702, $65,702, 85.

Wausau Motor Parts Co., Wausau, Wis., piston rings, $46,527, $46,527, 80.

General Motors Corp., Anderson, Ind., starting, lighting & ign. equip., $4,384,440, $4,384,940, 75.

General Motors Corp., Anderson, Ind., components, $8,112,000, $7,812,000, 75.
R. Lavin & Sons, Inc., Chicago, brass ingot, $73,345, $242,142, 60.
Gardner Machine Co., South Beloit, Ill., abrasive discs, $1,224,944, $978,519, 80.
Smith Oil Transportation Co., Peru, Ill., oil barges, $250,000, $250,000, 80.
H. E. Bremer Mfg. Co., Inc., Milwaukee, Wis., aluminum castings, $26,985, $26,985, 75.
Great Northern Railway Co., St. Paul, Minn. (Home Office), rail transportation, $19,500, $19,500, 80.
Great Northern Railway Co., St. Paul, Minn. (Home Office), rail transportation, $650,000, $650,000, 80.
American Smelting and Refining Co., Omaha, Neb., Bismuth refined lead, $52,000, $52,000, 60.
Union Pacific Railroad Co., Omaha, Neb. (Home Office), rail transportation, $5,406,820, $5,406,820, 65.
Beech Aircraft Corp., Herington, Kansas, aircraft parts, $2,354,116, $2,230,979, 75.
A. P. Green Fire Brick Co., Mexico, Mo., refractories, $965,688, $963,648, 85.
Fort Dodge Iron & Metal Co., Inc., Des Moines, scrap iron, $30,522, $30,522, 75.
Delavan Mfg. Co., Des Moines, nozzles for aircraft, $36,497, $36,497, 90.
Reed Roller Bit Co., Cleco Div., Houston, Tex., power tools, $326,350, $326,350, 85.
Eastman Products Corp., Plano, Texas, screw machine items, $295,680, $182,505, 80.
Texas Barge Line, Inc., Houston, transportation oil barge, $310,000, $310,000, 80.
International-Great Northern RR Co., Houston (Home Office), transportation, $2,432,000, $2,432,000, 80.
The St. Louis, Brownsville & Mexico Rwy. Co., Houston, RR transportation, $2,432,000, $2,432,000, 80.
Kaiser Aluminum & Chemical Corp., Baton Rouge, La., alumina, $16,500,000, $16,500,000, 80.
Kaiser Aluminum & Chemical Corp., New Orleans, aluminum pig, $75,000,000, $75,000,000, 80.
H. K. Porter Co., Inc., Hinderliter Tool Co. Div., Tulsa, Okla., plug valves, $122,000, $122,000, 90.
Reynolds Metals Co., Saline County, Ark., alumina, cryolite and aluminum fluoride, $2,540,407, $2,524,407, 80.
Lavaca Pipe Line Co. (Point Comfort Works, Port Lavaca, Tex.), pipe line, $1,000,000, $1,000,000, 80.
Monterey Iron & Metal Co., San Antonio, Tex., steel scrap, $24,840, $24,840, 75.
Kennecott Copper Corp., Garfield, Utah, leaching copper, $670,000, $670,000, 75.
Rosan, Inc., South Gate, Calif., gun mounts, $58,595, $58,595, 90.
Transformer Engineers, Pasadena, Calif., electronic equipment, $13,453, $13,453, 75.
Aerojet Engineering Corp., Azusa, Calif., ordnance, $1,076,880, $1,076,880, 75.
Hansen-Lynn Co., Inc., Burbank, Calif., throttle controls, $14,965, $14,965, 80.
J. C. Peacock Machine Co., Los Angeles, valves, $65,151, $56,764, 85.
J. C. Carter Co., Pasadena, Calif., turbine pumps, $23,556, $12,775, 90.
Effron & Co., Phoenix, Ariz., scrap iron, $17,000, $17,000, 75.
Eastern Iron & Metal Co., Ltd., Los Angeles, scrap steel, $70,000, $70,000, 75.
Stauffer Chemical Co., Compton, Calif., sulfuric acid, $57,070, $57,070, 80.
Townsend Co., Cherry Rivet Co. Div., Los Ang. Cty., rivets, $525,750, $138,240, 80.
Consolidated Vultee Aircraft Corp., San Diego, Calif., airplanes, $187,120, $187,120, 75.
Talley Machine & Mfg. Corp., Los Angeles, precision machine work, $36,055, $36,055, 80.
General Metals Corp., Burbank, Calif., hydraulic valves, $213,457, $209,122, 75.
Rheem Mfg. Co., Richmond, Calif., steel drums, $1,112,000, $170,000, 75.
Longren Aircraft Co., Torrance, Calif., wing attach fittings, $17,183, $12,402, 80.
Cherry Rivet Co., Los Angeles, rivets, $115,705, $115,705, 80.
Fletcher Aviation Corp., Pasadena, Calif., aircraft fuel tanks, $19,540, $15,735, 85.
Beverly-Holly Machine Works, Los Angeles, Calif., machining metal parts, $22,921, $22,921, 90.
Grand Central Aircraft Co., Tucson, Ariz., reactivation of aircraft, $25,011, $25,011, 85.
American Smelting & Refining Co., Tacoma, Washington, refined copper, sulphuric acid, $207,433, $207,433, 70.
Norton Co., Stamford, Ontario, Canada, aluminum Oxide abrasive, $295,400, $295,400, 75.
Norton Co., Chippawa, Ontario, Canada, aluminum oxide abrasive, $705,000, $705,000, 75.
Kaiser Bauxite Co., Jamaica, British West Indies, bauxite, $2,000,000 $2,000,000, 80.

UNSURPASSED QUALITY



Combines the operating economies of large continuous furnaces with the flexibility of batch-type equipment. Positive, directed flow of furnace atmosphere through load, combined with the "heat capacitor" assures rapid, uniform heating on dense, bulk-loaded parts and even on light case work.

GREATER PRODUCTION

The Dow Furnace has established production records in plants throughout the country. Forced, uniform quenching from atmosphere gives full hardness, reduces distortion, eliminates decarburization. One man can operate two furnaces with ease, producing as much as 1500-lbs. of light case work per hour.

WIDER VERSATILITY

Whether it's gas cyaniding, gas carburizing, clean hardening or carbon restoration work, the Dow Furnace is capable of processing a variety of parts having a wide range of heat treatments. To demonstrate the close tolerances of heat treatments, send us samples of your own parts for processing.

AT LOWER COSTS

Reductions in direct labor, material handling, machining and cleaning costs, coupled with improved quality, have resulted in savings amortizing the original cost of the Dow Furnace in a few months. Gas cyanides for ¼ to ⅓ the cost of liquid cyaniding.

THE DOW FURNACE COMPANY

FIRST
WITH MECHANIZED BATCH-TYPE
CONTROLLED ATMOSPHERE FURNACES

12045 Woodbine Ave. • Detroit 28, Michigan
KEnwood 2-9100

"Think of saving as well as of getting."

—Ben Franklin's Almanac, 1757

Scrap steel saved today can help steel products come thy way.

—Acme Steel Notebook, 1951

The current shortage of scrap steel makes the supply picture serious for all users of steel products.

Even before this scrap shortage faced the steel industry, increased civilian consumption and increased military needs made it impossible for Acme Steel to meet all the needs of all its 50,000 customers.

So save scrap steel. And, to make the best use of the Acme Steel products available to you, let your Acme Steel representative work with you on ways to increase efficiency, eliminate waste, maintain hard-to-replace equipment in your packaging, shipping and materials handling.

We will continue to help you—the way we have helped our customers for more than 71 years.

Save scrap steel today. *Get* more steel products tomorrow.

How you can help in the scrap drive.

1. Do a thorough housecleaning job in your shop. Collect all scrap steel, no matter how small.

2. Check your equipment now! Junk all machines worn out or broken beyond repair.

3. Ask your people to do the same job of housecleaning at home.

4. Sell your collection to a dealer in metal scrap. He will see it gets where it is needed.

ACME STEEL COMPANY
Dept. IA-81, 2838 Archer Avenue, Chicago 8, Illinois
To find out which of Acme Steel's 41 service offices in the United States and Canada is nearest you, check your telephone directory or write us.

ACME STEEL CO. CHICAGO

ACME STEEL

1951 is Acme Steel Company's 71st year of continuous operation, and the 50th consecutive year in which we have paid dividends to our stockholders.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVER-STITCHERS and ACME SILVERSTITCH WIRE for box stitching • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slat stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, barbed box straps, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, tool mounts, reel stands, coil holders, coil trays.

• *News of Industry* •

STEEL CONSTRUCTION NEWS

Fabricated Steel Awards this week include the following:

5000 **Tons,** Gonzales, Fla., Chemstrand Corp. (duPont) nylon plant, to Bethlehem Fabricators, Bethlehem.

252 **Tons,** Caddo Parish, La., highway bridge, for La. State Highway Department, to Virginia Bridge Co., Birmingham.

Fabricated Steel Inquiries this week include the following:

3500 **Tons,** New Cumberland, Pa., three warehouses for Corps of Engineers, U. S. Army, bids due Sept. 5.

2000 **Tons,** Gonzales, Fla., Chemstrand Corp. (duPont) nylon plant.

1740 **Tons,** Union County, N. J., Route 6 Parkway, Sect. 7C, N. J. State Highway Department. Bids due Aug. 30.

590 **Tons,** Trenton, N. J., Route 26 Extension, Sect. 2C, N. J. State Highway Department. Bids due Sept. 5.

335 **Tons,** Lackawanna and Wyoming Counties, Pa., highway bridge on LR 9, Pa. State Department of Highways. Bids due Sept. 7.

152 **Tons,** Thetford Vt-Grading, drainage, and two bridges on Route 113 A (Chelsea-Thetford Road) and Route 113 (Chelsea-Ely Road). R. H. Arnold, Branford, Vt., district engineer. Sept. 1, 1952 completion date.

116 **Tons,** Cambria County, Pa., highway bridge on LR 11015, Sect. 1, Pa. State Dept. of Highways. Bids due Sept. 7.

Reinforcing Bar Awards this week include the following:

1100 **Tons,** Cleveland, Westinghouse Jet Engine Plant, to Truscon Steel Co.

1081 **Tons,** Boston, Mass., Boston connection to Boston Central Artery, Bethlehem Steel Co., Pittsburgh, Pa., low bidder.

1000 **Tons,** Louisville, General Electric Jet Engine Plant, to Bethlehem Steel Co.

270 **Tons,** Fostoria, Ohio, sewage plant, to Truscon Steel Co.

260 **Tons,** Evanston, Illinois, Community Hospital, to Truscon Steel Co.

195 **Tons,** Chicago, Leviton Corp., to Truscon Steel Co.

170 **Tons,** Windsor, Conn., 4 span plate girder bridge and macadam approaches Brunalli Construction Co., Southington, Conn., low bidder.

150 **Tons,** East Joliet, Illinois, E. J. and and E. Railway Office Building, to U. S. Steel Supply Corp.

Reinforcing Bar Inquiries this week include the following:

1500 **Tons,** Detroit, Chrysler Corporation.

670 **Tons,** Kenosha, Wisconsin, superstructure, Nash Motors.

Atlantic Steel Opens Expansion

The first shovelful of sod was turned recently to mark the beginning of the first phase of expansion construction by Atlantic Steel Co., Atlanta, Ga. Initial step of the project will be installation of an electric furnace with a yearly capacity of 100,000 tons of steel.

It will supplement Atlantic's three openhearths. Steelmaking capacity will move up by 50 pct to 300,000 tons. The new electric furnace should be melting by February 1952.

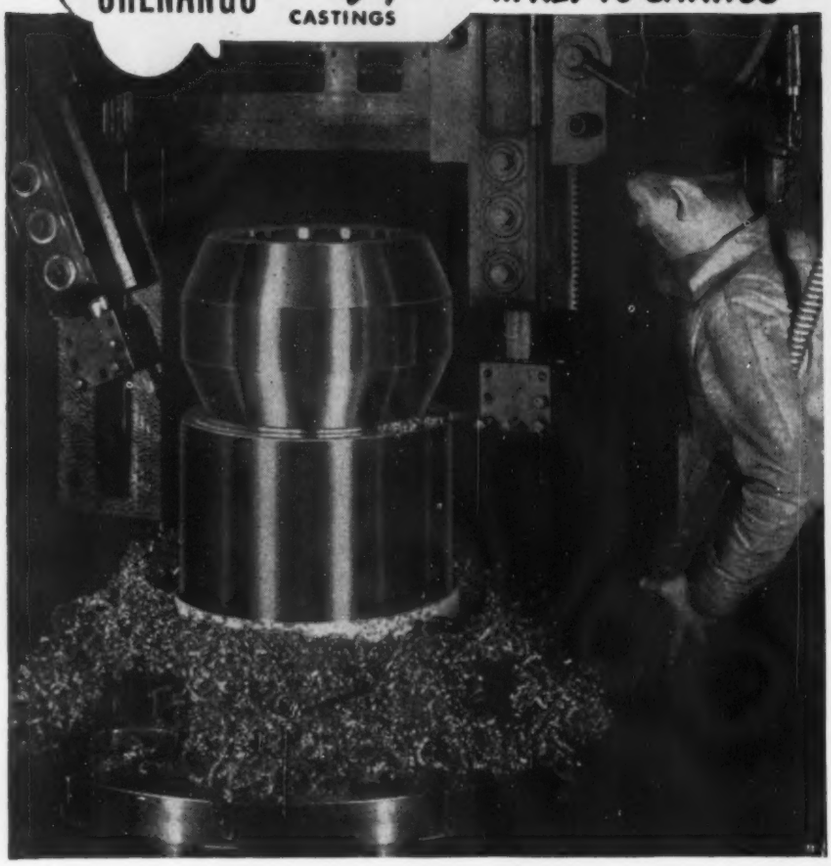
A HOT ROD takes smart handling . . .

especially when it's *red hot*, like this Brass rod coming through the extrusion machine. This touch-and-go operation is handled deftly by veteran mill men to whom it has long been second nature to do their jobs in real "Bristol-Fashion"... producing sheet, rod, wire and extruded shapes that consistently prove Bristol to be "Brass at its Best." The Bristol Brass Corporation, since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

"Bristol-Fashion" means Brass at its Best

CARNEGIE INSTITUTE OF TECHNOLOGY LIBRARIES

SHENANGO Centrifugal CASTINGS ... KEY TO SAVINGS



How to save time and money on symmetrical parts!

YOU are in line for a double advantage when you turn to Shenango for symmetrical, tubular or annular parts, large or small.

First, such parts are produced by Shenango's advanced centrifugal casting process. This means *tougher* parts because of finer, pressure-dense grain, greater strength, better elongation and freedom from sand inclusions, blow holes and other often hidden defects. It also means less waste, less machining.

Second, Shenango has the modern machining facilities and skilled workmanship to give you semi-machined or finished parts... precisely as specified... at minimum cost! The heavy trunnion bearing shown above is one of the many types of parts, large and small, ferrous and non-ferrous, regularly produced at Shenango.

FREE BULLETINS

Find out if Shenango can help you save time, money and material. Bulletin No. 150 covers non-ferrous centrifugally cast parts; Bulletin No. 151 for parts of Meehanite Metal and Ni-Resist. Either or both are yours for the asking.

SHENANGO-PENN MOLD COMPANY
Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL

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Goodly Part to the Small

Latest figures on vessel procurement by the Navy Bureau of Ships indicate that firms with fewer than 500 employees are continuing to get a substantial share of military contracts.

Acting as single-service procurement agent for Army and Air Force vessels, the Bureau in fiscal 1951 placed orders for 586 vessels (at $50 million) for these services, with smaller firms signing up for 60 pct of total funds.

Most of the contractors in the small business class are on the East Coast, which received 22 contracts. West and Gulf Coast builders were awarded 10 contracts each.

Of the 53 contracts let, 29 were negotiated, 9 were awarded after formal advertising, and the remainder were on a proprietary, noncompetitive basis.

Job Well Done—Quickly

The Sam W. Emerson Co., a Cleveland construction concern, recently accomplished, in little over a month, a job which might normally have taken 6 months. The construction job involved was the dismantling of an old plant of Superior Foundry, Inc.

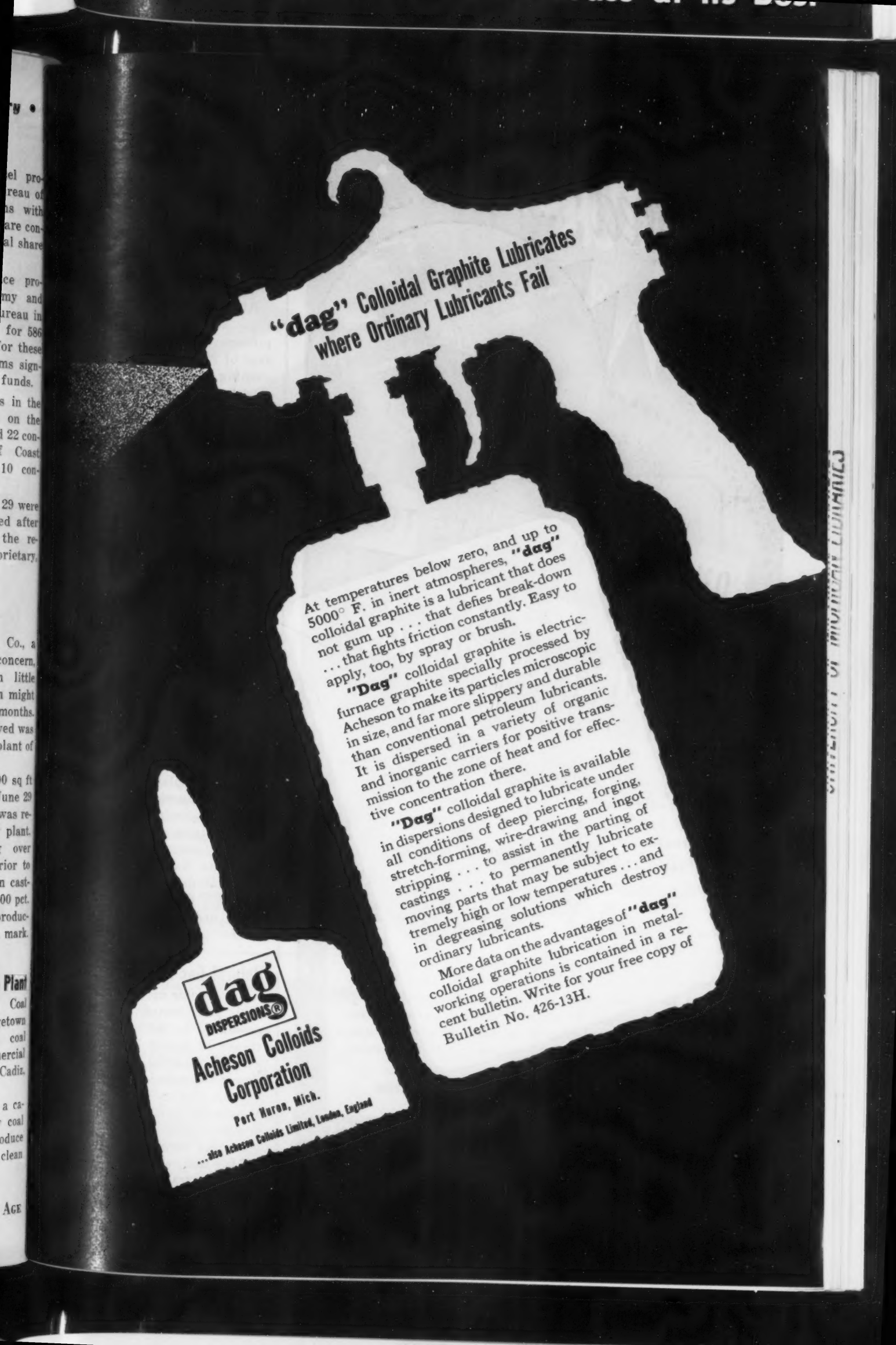
Dismantling of the 50,000 sq ft area plant was begun on June 29 and by July 30 production was resumed in a completely new plant.

The expansion, costing over $500,000, will enable Superior to increase its heavy gray iron casting production by at least 100 pct. It is estimated that 1951 production will hit the 20,000 ton mark.

Open Biggest Coal Cleaning Plant

Pittsburgh Consolidation Coal Co. has opened its Georgetown preparation plant, largest coal cleaning plant in the commercial bituminous industry, at Cadiz, Ohio.

The $5 million plant has a capacity of 1500 tons of raw coal input per hour and will produce an average of 1275 tons of clean product.


"dag" Colloidal Graphite Lubricates where Ordinary Lubricants Fail
At temperatures below zero, and up to 5000° F. in inert atmospheres, "dag" colloidal graphite is a lubricant that does not gum up . . . that defies break-down . . . that fights friction constantly. Easy to apply, too, by spray or brush.
"Dag" colloidal graphite is electric-furnace graphite specially processed by Acheson to make its particles microscopic in size, and far more slippery and durable than conventional petroleum lubricants. It is dispersed in a variety of organic and inorganic carriers for positive transmission to the zone of heat and for effective concentration there.
"Dag" colloidal graphite is available in dispersions designed to lubricate under all conditions of deep piercing, forging, stretch-forming, wire-drawing and ingot stripping . . . to assist in the parting of castings . . . to permanently lubricate moving parts that may be subject to extremely high or low temperatures . . . and in degreasing solutions which destroy ordinary lubricants.
More data on the advantages of "dag" colloidal graphite lubrication in metal-working operations is contained in a recent bulletin. Write for your free copy of Bulletin No. 426-13H.
dag DISPERSIONS®
Acheson Colloids Corporation
Port Huron, Mich.
...also Acheson Colloids Limited, London, England

Proved!
"In the Plants of a Large Canadian Steel Producer"
ON RUN-OUT TABLES TOO . .
LOVEJOY L-R
FLEXIBLE COUPLINGS
THREE YEAR
MAINTENANCE-FREE
SERVICE RECORDS
Eliminate costly shut-downs and break-downs due to coupling failures on run-out tables and other equipment with Lovejoy Flexible Couplings. They are designed to correct mis-alignment without vibration, backlash or surge. Free-floating load cushions are suspended between heavy metal jaws. No shut-downs for changing cushions, which last two to five years. No lubrication ever needed.
WRITE FOR COMPLETE CATALOG AND QUICK-FINDING SELECTOR CHARTS
LOVEJOY FLEXIBLE COUPLING CO.
5066 WEST LAKE STREET CHICAGO 44, ILLINOIS
Also Mfrs. Lovejoy Universal Joints and Lovejoy Variable Speed Transmissions

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• *News of Industry* •

Ship First Cartridge Case Press

The first hydraulic press to produce 105 mm cartridge cases from cold-drawn steel was shipped recently by its maker, Lake Erie Engineering Corp., Buffalo, to Ekco Products Co., Chicago. The 200-ton press will make the first draw of the cartridge cases.

Also in the production line at Ekco will be 17 more Lake Erie presses. The 200-tonner has a bed area of 30 in. by 30 in., a daylight opening of 66-in. and 48-in. stroke. Powered by a 125-hp motor, it stands 22 ft tall.

Gun Tube Plant to Be Built

Construction of a new $32 million plant near Point Pleasant, W. Va., was announced recently by Rep. M. Burnside, D., W. Va. The new plant, to be constructed on the site of the West Virginia ordnance works, will be used for the production of gun tubes.

It is believed that a large steel company will build the plant which will ultimately employ upwards of 1000 people when it gets into scheduled production.

Ask Halt of Electroplating Growth

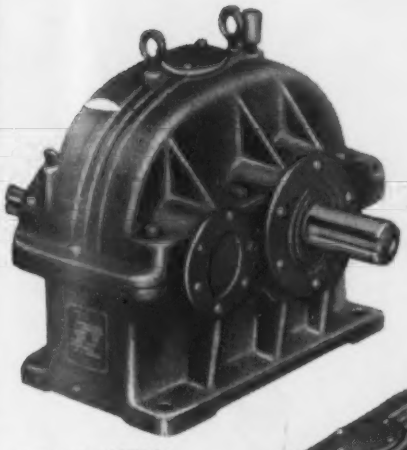
Electroplaters are urging denial of fast tax writeoff applications for expansion or construction of new electroplating plants. National Production Authority will survey the industry to determine if capacity is adequate.

The electroplating industry committee warns some firms have only a 30-day inventory of nickel but NPA sees no revision of its nickel order (M-14) in the near future.

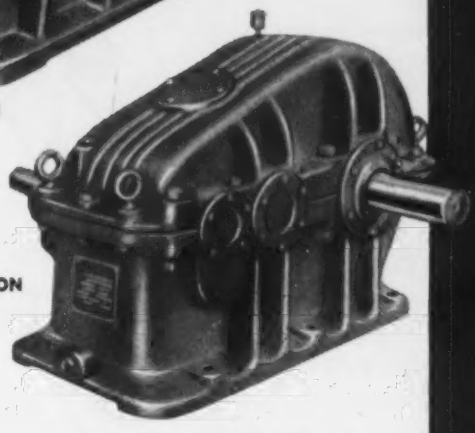
Natural Gas Income Rises

Net income of the nation's natural gas companies last year amounted to $182,730,000—an increase of nearly 30 pct over the amount reported to the Federal Power Commission for 1949.

Gross income recorded by the companies, including returns from non-gas utility operations and non-operating income, reached $234,426,000 last year. Interest on long-term debt was earned 4.3 times.



SINGLE REDUCTION



DOUBLE REDUCTION

COMPACT

MORE POWER IN LESS SPACE!

TRIPLE REDUCTION

FOOTE BROS. MAXI-POWER PARALLEL SHAFT HELICAL GEAR DRIVES

MORE POWER – LESS SPACE – Precision processed gearing, improved materials and heat-treatment, closer manufacturing tolerances, permit selection of smaller size, lower weight units.

IMPROVED PERFORMANCE – Generated helical gearing of maximum accuracy for uniform load distribution—positively located gearing for full tooth engagement across entire gear face—all mean better performance.

SMOOTH OPERATION – Overlapping tooth action of highly accurate helical gearing—close backlash tolerances—reinforced housing design plus extra capacity **Antifriction Bearings Throughout** provide smooth, quiet operation.

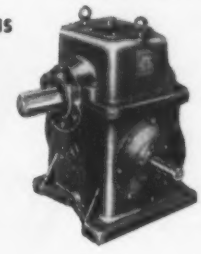
42 SIZES – Single, double and triple reductions, ratios from 2.08 up to 360 to 1—capacities up to 1,550 h.p. provide the correct unit for practically any application.

A Foote Bros. enclosed gear drive for any industrial application. Foote Bros. will gladly consult with you on your enclosed gear drive requirements.

LINE-O-POWER DRIVES

HYGRADE DRIVES

FOOTE BROS.-LOUIS ALLIS GEARMOTORS



FOOTE BROS.

Better Power Transmission Through Better Gears

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FOOTE BROS. GEAR AND MACHINE CORPORATION
Dept. M, 4545 So. Western Blvd., Chicago 9, Ill.

Send me Bulletin MPB on Foote Bros. Maxi-Power Drives.

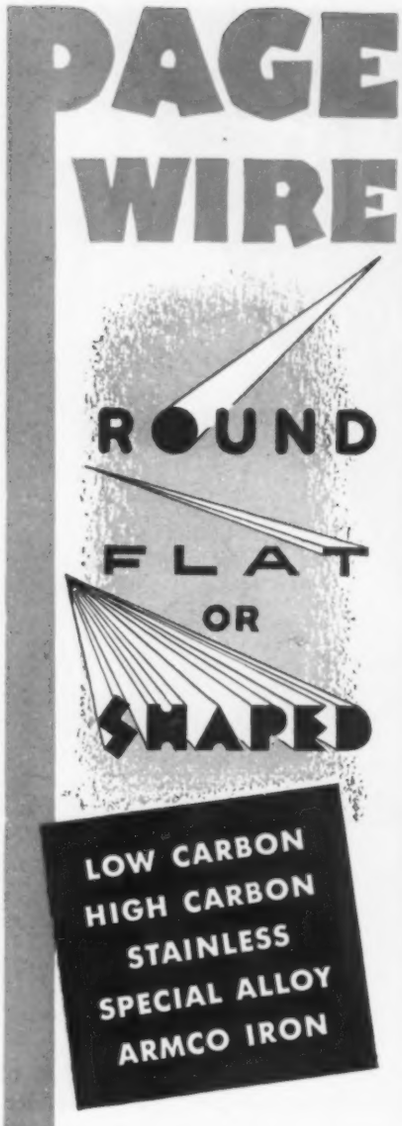
Name.....

Company.....

Position.....

Company Address.....

City.....*Zone*.....*State*.....



LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON

You draw the Shape —Page can draw the Wire

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to 3⅛"; width-to-thickness ratio not exceeding 6 to 1.

for Wire or Information about Wire—

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Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

new equipment

Continued from Page 38

Hard overlay electrode

For all-around use where a relatively inexpensive hard overlay electrode is required and when the higher priced high alloy overlays do not seem warranted, EuteChrom 2X for ac-dc arc welding is available. It is a FrigidArc flux-coated alloy that deposits strong, dense overlays with good corrosion resistance at lower amperages, thus minimizing dangers of distortion and stress. The electrode is recommended for use with carbon and alloy steel surfaces that are subjected to severe abrasive wear and comparatively mild impact. *Eutectic Welding Alloys Corp.*

For more data insert No. 13 on postcard, p. 35.

Universal depth gage

An indicating type depth gage allows measurement of depths, lengths, angles, or steps to tolerances as fine as 0.00005 in. anywhere in a 3-in. length. Simplicity and inherent accuracy are claimed for the instrument. Reference platen of Meehanite, electrolized for wear and corrosion resistance, is 3¼ x 4 in. Indicator graduations in inches or millimeters. Vertical adjustment of indicator on base, together with contact points supplied allows depth measurements within following limits: Contact point 1⅛ in., depth limits 0 to 1 in. plus indicator range; 2⅛ in., 1 to 2-in. plus indicator range. *Saart, Kraemer and Hanscom, Inc.*

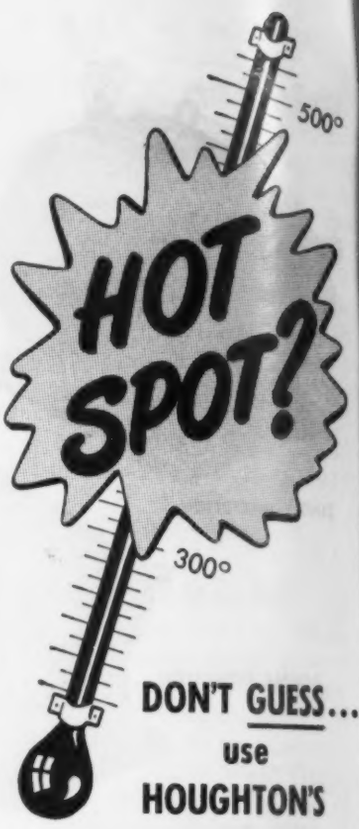
For more data insert No. 14 on postcard, p. 35.

Dust mask

Personnel protection at low cost is provided by dust masks processed from a vegetable fiber that will not dissolve in water or live steam, can be auto claved, and sterilized in boiling water. The material is soft in texture, porous, absorbent and free from irritating lint or yarn. Masks are finished with elastic head band and may be used many times. Not for use in atmospheres of toxic dust, silica, or fumes. *General Scientific Equipment Co.*

For more data insert No. 15 on postcard, p. 35.

Turn Page



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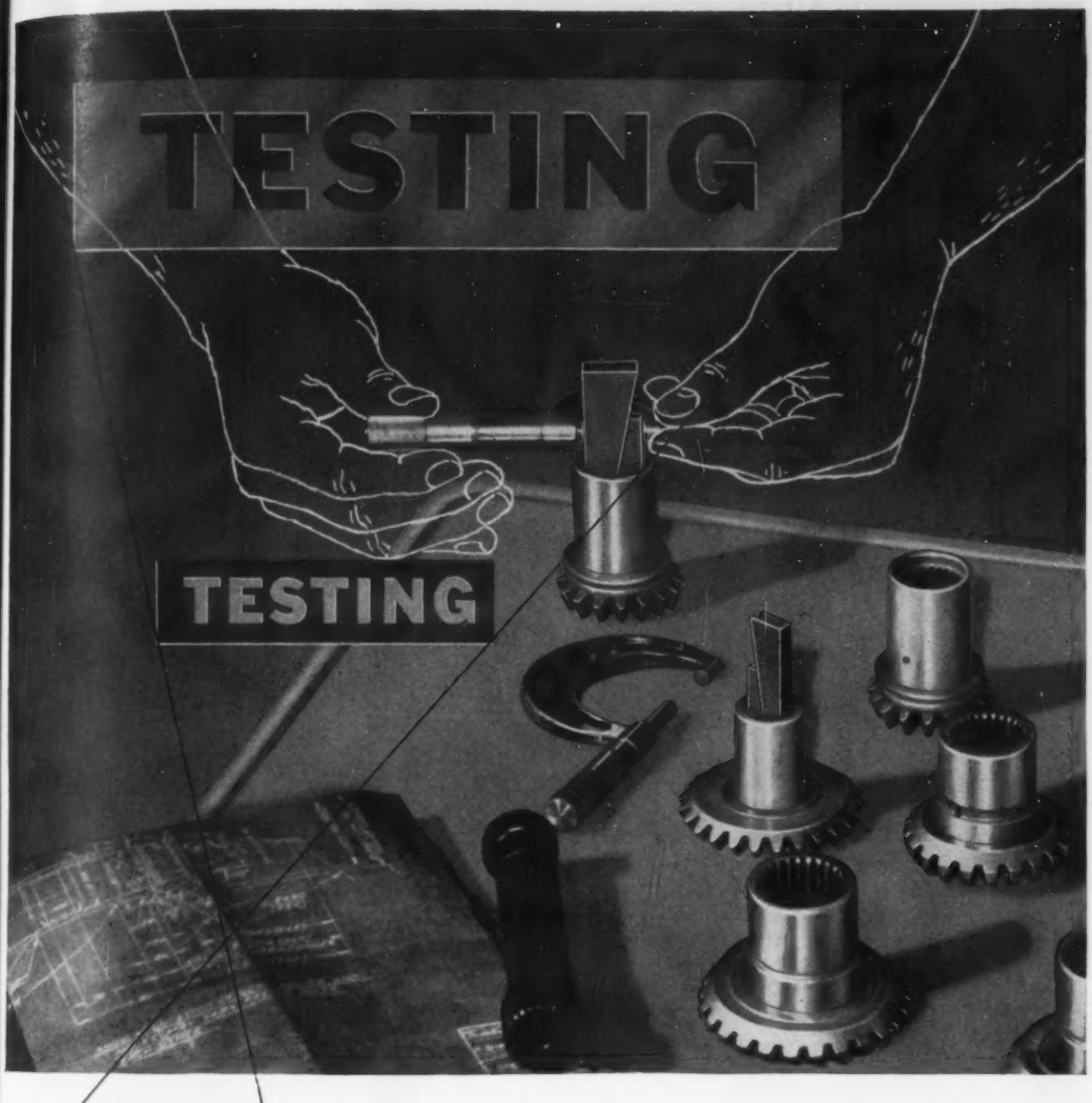

TESTING might mean only cursory examinations or spot checks along the production line. But that is not good testing. Here—at BRAD FOOTE—men with skilled hands using modern precision instruments test constantly, during every step of manufacture. They realize that the responsibility of satisfying you, our customers, rests primarily with them. They know that "*No one shares our responsibility.*"

• Our method of testing dimensions, hardness and soundness of metal structures, and smoothness of finish is part of our system of complete control. It means that the BRAD FOOTE gears you buy for use on equipment you sell to others—or for use in your own shop—will give satisfactory service.

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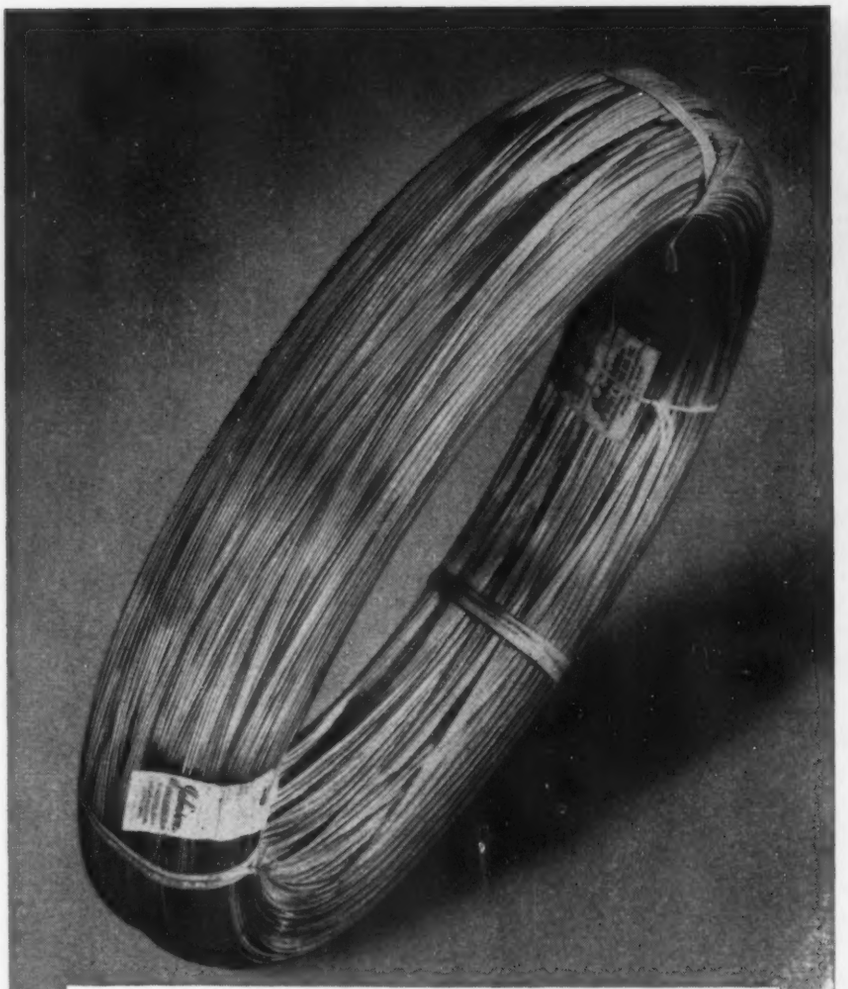

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For your processes it will pay you well to specify wires made in this specialty mill. You will save time, maintain quality. JOHNSON makes wire as fine as .003".

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- AIRCRAFT CABLE WIRE.
- HIGH CARBON ROPE WIRE.
- HARD DRAWN SPRING WIRE.
- OIL TEMPERED SPRING WIRE.
- HIGH TENSILE GALVANIZED STEEL WIRE.
- HOSE REINFORCEMENT WIRE (BRAIDED TYPE).
- FLAT AND HALF OVAL SPECIAL SPRING WIRE.
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new equipment

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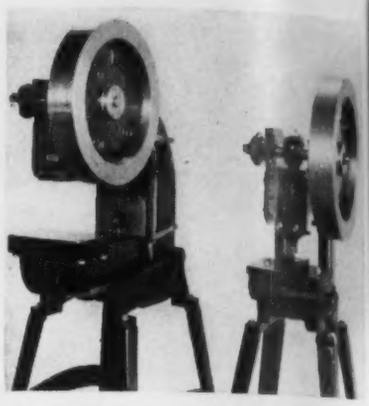

Five-ton punch presses

Two new power presses, the Standard and the 4-in-1 5-ton variable speed, have ram speeds suitable for deep drawing, piercing and blanking operations. A massive 18-in. diam, 110-lb flywheel supplies the momentum needed for the slow speed operation, while ram speeds can be varied from 95 to 280 strokes per min by adjusting the variable speed motor pulley. Switching from single to repeat operation instantly is possible without stoping the motor. An adjustable bed permits conversion to a long, half, or horn type punch press, and a deep throat permits punching to the center of a 24½-in. circle. *Kenco Mfg. Co.*

For more data insert No. 16 on postcard, p. 35.

Emergency hardening

Two new, easy-to-use, moderately priced compounds for emergency surface hardening of small tools or parts with an ordinary torch have been announced. Eutectic's Instant Hardner No. 1 is said to harden steel tools, parts, edges, threads, dies, drills, etc., in a jiffy without conventional heat treating. Instant Hardner No. 2, while applied like No. 1, is strengthened with small hard facing particles mixed right into the compound. These hard particles, when heated, fuse with the parent metal to give a combination of hardening and hard overlay, making it particularly effective for such applications as hardening a plate against abrasive wear, etc. *Eutectic Welding Alloys Corp.*

For more data insert No. 17 on postcard, p. 35.

Turn Page

...and here's a Counter that talks to Jet-Testers in their own language...

Added Evidence that—

Everyone Can Count on VEEDER-ROOT

This technician is reading an electrically operated counter, used to record data in test instruments that check aircraft performance.

And this counter is one of innumerable Veeder-Root specials now on duty in every arm of the service. If you can use such counters (or need counters of special design) on D-O—rated orders, then you can count on Veeder-Root to help you with all possible dispatch.

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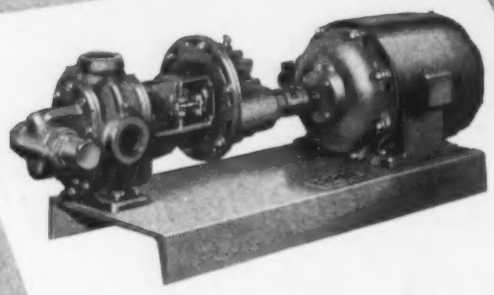

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FOR GENERAL PURPOSE PUMPING

What do you expect of the pumps you install? Efficiency, dependability, endurance, simplicity, an unusually high record of performance? If these are your requirements, by all means investigate the Roper 3600 Series; pumps that are engineered to do a wide range of jobs handling both thick or thin clean liquids.

At this very moment the interests of tank truck operators, refineries, bulk stations, process plants and general industries are being served by thousands of Ropers. The size for your needs can do an equally productive job for you!

OUTSTANDING FEATURES...OUTSTANDING PERFORMANCE

Pumping liquids from A to Z calls for quality-made components accurately assembled. Series 3600 pumps feature hardened helical pumping gears; heavy duty, high-lead bronze bearings; adjustable relief valve (from 20 to 90 P.S.I.); split packing gland; one-piece case of practical design. Standard or special fitted models available. Pressures to 60 P.S.I. — capacities 40 to 300 G.P.M.

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new equipment

Continued

Magnetic driving assembly

A new magnetic driving assembly with low-cost replaceable socket for use on power wrenches for self-tapping and sheet metal screws is available. An Alnico magnet is embedded in the driving member instead of the socket, which, when worn, can be quickly replaced without the risk of damaging or destroying the Alnico material. The Magna-Tip tool always delivers maximum pulling power to the screw head because the spring-loaded Alnico magnet, transmitting its magnetism through a hardened steel tip, never permits any air gap that would dissipate or completely lose the magnet's pulling power. *Magna Tool Corp.*

For more data insert No. 18 on postcard, p. 3

Turbine buckets

Standardized turbine buckets have been developed for high and low speed applications. The standard root is designed for great strength with the centrifugal loading of the bucket very close to the center of effort of the root, avoiding tilting of the bucket. Integral shrouds are machined on the periphery after assembly, resulting in a continuous surface without gaps or rivet heads. A feature is a high speed ket bucket design producing an unbroken, continuous spacing without gaps and without sacrifice of strength. A selection chart will be furnished on request. *Schellen True Corp.*

For more data insert No. 19 on postcard, p. 3

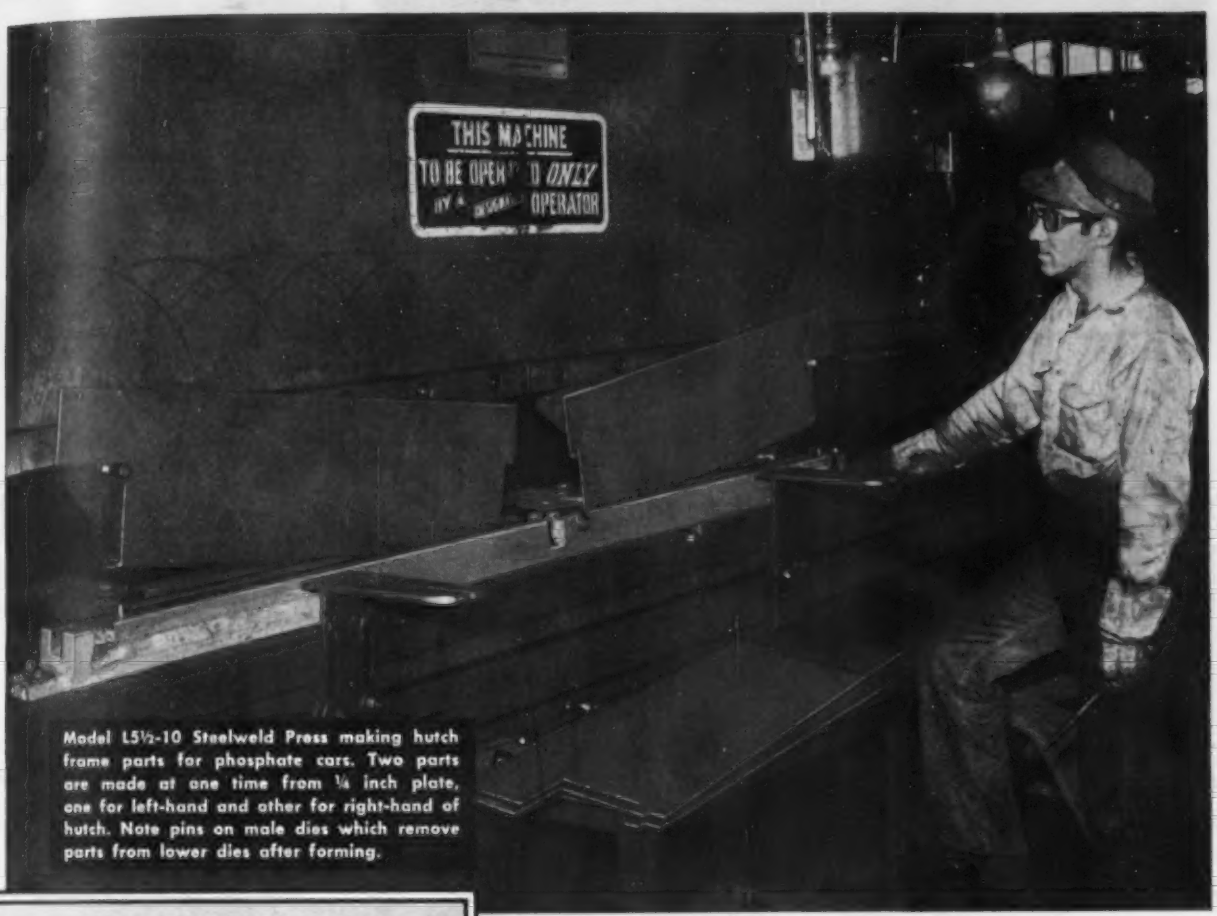
Shelf-type truck

A light duty truck with smooth steel shelves is built to meet individual requirements. Any size type of caster and wheel is available and lips of the shelves can be supplied turned up or down. *Market Forge Co.*

For more data insert No. 20 on postcard, p. 3

Turn Page

PULLMAN-STANDARD FINDS MANY USES FOR STEELWELD PRESS



Model L5½-10 Steelweld Press making hutch frame parts for phosphate cars. Two parts are made at one time from ¼ inch plate, one for left-hand and other for right-hand of hutch. Note pins on male dies which remove parts from lower dies after forming.

A few of the many parts produced within a short period on the Steelweld Press. Curves and bends of every shape and degree are formed quickly and accurately.

"The more we use our Steelweld Bending Press, the more we learn about what it can do for us", said the Day Superintendent of Pullman-Standard Car Mfg. Co., Butler, Penna. "As a result it is handling more and more of our work. We are doing a great many forming jobs on it that did not occur to us as being possible when we first installed the machine."

An endless variety of parts are produced on this press. These are mostly of ¼ and ⅜ inch steel plate and involve curves and bends of every description for gussets, fulcrums, braces, frames, housings, etc. used in the manufacture of railroad cars.

The dies used are relatively simple and made in the company's shop. Because dies are easily changed, it usually takes about an hour to set up for a new job.

If you work with metal plate in any thickness up to one inch, for bending, forming or punching, you should get the facts on the many features of Steelweld Presses.

GET THIS BOOK!

CATALOG No. 2010 gives construction and engineering details. Profusely illustrated.

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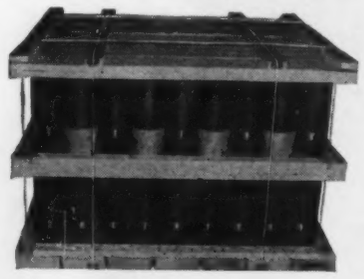
GERRARD ROUND STEEL STRAPPING

complies with packaging specifications

JAN-P-106A and JAN-P-108

● Take advantage of Gerrard's years of experience in packing and packaging when you face the problem of packing defense orders. Gerrard Round Steel Strapping complies fully with the joint Army-Navy specifications JAN-P-106A and JAN-P-108 for overseas packing.



These shells were easily and securely tied to a pallet with Gerrard Round Steel Strapping.

A Gerrard engineer can help you with your packaging problems. He can assist you to plan boxes and cartons that conform to specifications, and at the same time help you to make the best use of the steel strapping available for packaging. Where practicable, our engineer will demonstrate the advantages of using Gerrard Steel Strapping for bundling, palletizing, or securing packages with the Diagonal Tie.

Orders for defense requirements receive preference in delivery according to current regulations. Strapping available for non-defense orders is being equitably distributed among our customers. Phone, write or wire for further information.

Gerrard Steel Strapping Company,
4705 South Richmond St., Chicago 32, Ill.

UNITED STATES STEEL

A-1018

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. . . a dependable design and construction service in industrial cars

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new equipment

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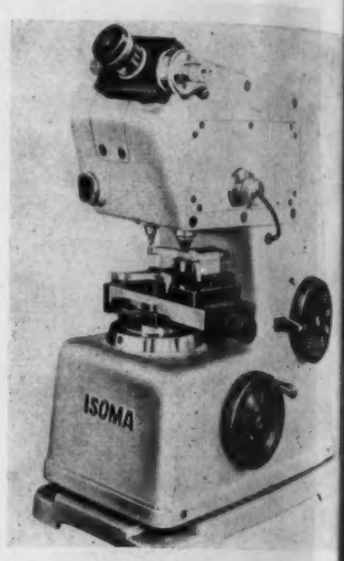

Hardness tester

Measuring Vickers values on small round and flat metal parts, foil, tinplate, glass, plastics, etc., can be accomplished with an Isoma hardness tester. This instrument has an automatic weight selecting device for applying dead weight loads from 50 to 1000 g. The minimum thickness of flat pieces to be tested is 0.0005 in.; minimum diameter for rounds from 0.003 to 0.005 in. Maximum distance between indenter and table is 2 13-64 in. The built in optical measuring system permits measuring impressions accurately to within 0.000004 in. *Cosa Corp.*

For more data insert No. 21 on postcard, p.

Torque control on presses

Torkarm, a device that safely absorbs torque on drill presses and tappers, features a front Torkarm unit that enables the Torkarm to be moved from spindle to spindle down the front of any inline multiple spindle drill press. Work or a fixture can be placed on a work plate, the Torkarm attached directly to the fixture, or the fixture held by a special Quic-Clamp. Using either method, work is free to float under the spindles, yet is always under the safe torque control of Torkarm that bridals the work deadcenter and stationary under any torque load. *Torkarm Corp.*

For more data insert No. 22 on postcard, p.

Resume Your Reading on Page 39

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ublications

Continued from Page 35

iamond abrasive

diamond abrasive prepared pecially for lapping and polishg carbide drawing and heading es is described in a new 4-p. lder. Specific performance and plication advantages are detailed. he abrasive is said to be 20 pct ster than abrasives formerly ed for finishing dies used in wire awing and cold-heading. Comete catalog and price data e also included. *Elgin National atch Co.*

free copy insert No. 28 on postcard, p. 35.

emperature conversion

n easy reference chart for use in nverting temperatures between 70° to +6500°, to either Fahrenit or Centigrade, is now availle. It is printed in two colors stiff plasticized board, ready for e in binder. Reverse side lists ajor types of thermostats made Stevens, their applications and neral performance characteris-s. *Stevens Mfg. Co.*

free copy insert No. 29 on postcard, p. 35.

ress for small parts

st-cutting ideas are contained production reports on presses signed to handle small part opations, from swaging to multiple nch riveting. The data sheets scribe the Hydroilic Multipress. ustrations of actual press operans and applications are given th complete descriptions of the erations involved. *The Denison gineering Co.*

free copy insert No. 30 on postcard, p. 35.

eel handbook

e ever-useful Ryerson steel ndbook has been reissued for 51. Within the covers of this cket book is a host of informan which no purchasing agent afford to be without. The secn of useful data alone will save ny hours by providing quick swers to questions which arise regard to the purchase and use steels. *Joseph T. Ryerson & n, Inc.*

free copy insert No. 31 on postcard, p. 35.

Turn Page

PERKINS custom-made GEARS provide + performance

MAGNAFLUX INSPECTION: Accuracy and variety of devices used in our inspection department are of prime importance in maintaining PERKINS' quality standards.

Write for our bulletin "Perkins Gears" for full data on our gear engineering facilities

Perkins custom-made Gears—for aircraft engines or for any other application—are first and foremost the product of a reliable and experienced gear engineering organization. Thus they provide a consistent plus in the performance of the product in which they are installed.

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Have us quote on your requirements.

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Bevel Gears
Ratchets
Worm Gears
Spiral Gears
Spur Gears with shaved or ground teeth
Ground Thread Worms

PERKINS MACHINE & GEAR COMPANY

WEST SPRINGFIELD, MASSACHUSETTS

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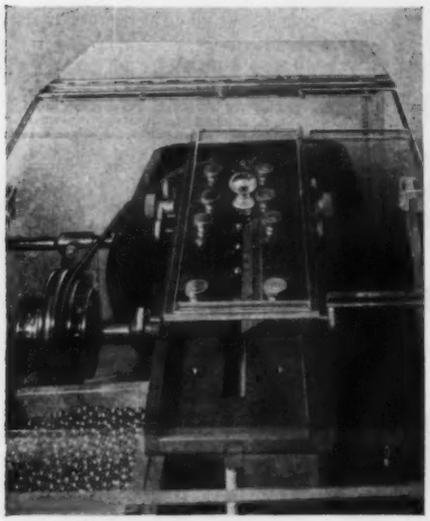

Quadruple Protection

This Gauging Machine is primarily used to gauge balls of 1/32" to 3/32" diameters. The room in which this machine is installed is air conditioned, dust, humidity and temperature proofed. It also operates under lucite encasements to further protect the balls from air currents.

It accurately gauges balls to within plus or minus .00001 of an inch.

Whenever you need precision balls of extremely fine tolerances, perfect surface finish, sphericity and size accuracy—specify Universal Precision Balls. They reduce friction, wear and maintenance costs to an absolute minimum. All Universal Balls are 100% inspected and individually gauged.

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PRECISION BALLS OF CHROME AND STAINLESS STEEL, BRONZE AND SPECIAL METALS.

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publications

Continued

Die steel chart

Complete list provides standard stock sizes made by Simonds. These die steels have recently become available in 36-in. long bars in 35 standard stock sizes, from ½ x 2 in. up to 1½ x 10 in. These are in addition to regular 18-in. bars furnished in 159 stock sizes. *Simonds Saw and Steel Co.*

For free copy insert No. 32 on postcard, p. 35.

Flexible burring

A flexible burring method is described in a new 8-p. booklet. The operation uses suitable cloth of felt wheels or bobs, coated with compound. Using these, the operator is said to have better control over removal of sharp edges than with other methods. Tolerances are more readily held. The booklet gives standard practice for both ferrous and nonferrous metals and instructions on selection of correct wheels and compounds. *Lea Mfg. Co.*

For free copy insert No. 33 on postcard, p. 35.

Light checks surfaces

How a beam of light is being utilized as a straight-line reference in locating and measuring with high precision variations in surface flatness is described in a 4-p. bulletin. Variations in surface flatness of such things as bed plates and "V"-ways are magnified 1000 times with this equipment. *F. T. Griswold Mfg. Co.*

For free copy insert No. 34 on postcard, p. 35.

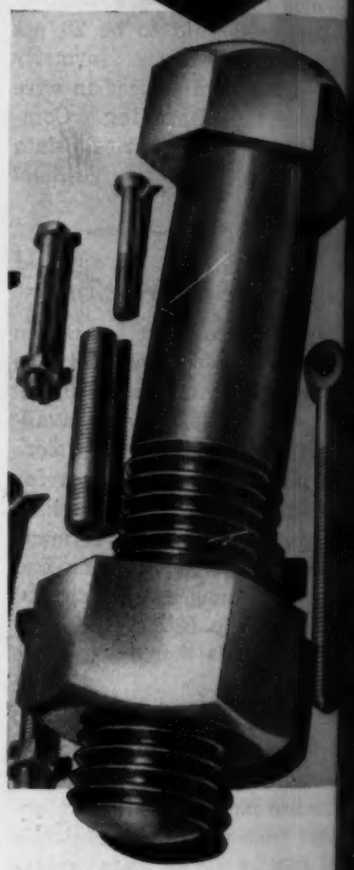
Inductrols

Redesigned low-voltage, dry-type, induction voltage regulators are described in a new bulletin. Their application and operation is described. Sketches, line drawings and charts show operating connections. Complete price and purchasing data on this equipment, rated 0.3 kva to 24 kva, for use in circuits rated 3 kva to 240 kva, is included. *General Electric Co.*

For free copy insert No. 35 on postcard, p. 35.

Resume Your Reading on Page 36

First for BOLTS NUTS STUDS



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★ Heat-treated Alloy Steels ★ Silicon Bronze ★ Naval Brass
★ Monel Metal

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Use Headed and Threaded Fasteners for Economy and Reliability

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T.M. REG.

IRON AGE *markets and prices*

market briefs and bulletins

cautious — Declining order backlogs are breeding more cautious buying habits among purchasing agents, according to a survey just completed by Purchasing Agents Assn. of Chicago. They report prices tending to stabilize and employment holding at high level. They say defense production in the Midwest is spotty. Orders on hand are in smallest volume yet reported for this year. About 58 pct of their members think materials will be more plentiful during the rest of this year.

"sick" trainmen — Bethlehem Steel's Lackawanna plant was closed down almost completely early this week by conductors and brakemen of a company-owned connecting railroad who reported sick. Thus the tentative ingot rate for Buffalo this week is 40 pct of rated capacity. The national rate is scheduled at 98 pct of rated capacity, 2 points lower than last week's revised rate.

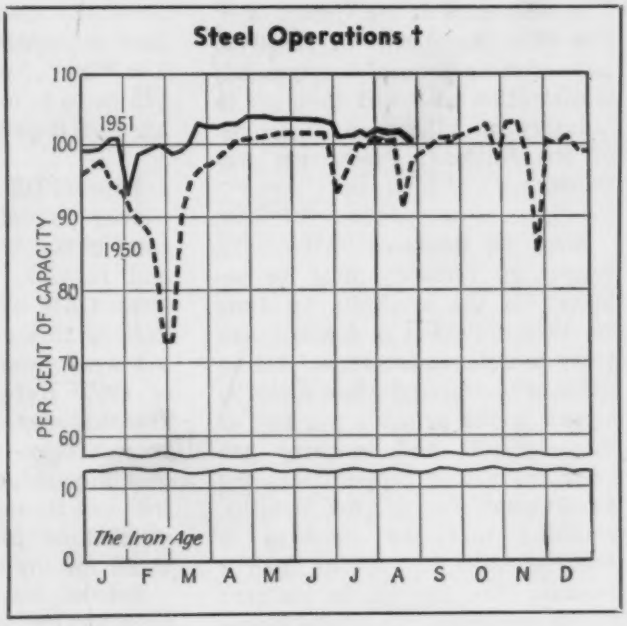
rates rise Aug. 28 — Railroads notified the Interstate Commerce Commission they expect to put the recently authorized higher freight rates into effect on Aug. 28. ICC said the higher rates, which range between 6 pct and 9 pct, could be put into effect on 15 days' notice on all products except grain. Higher grain rates must be posted 30 days in advance. (See p. 88.)

kill channel bill—An amendment to provide $20 million for carving a 40-ft channel in the Delaware River from Philadelphia to Trenton flopped in the Senate last week. The amendment was sponsored by Senator Edward Martin, R., Pa., and was sabotaged by Senator Brien McMahon, D., Conn., who labeled it a "direct subsidy to the U. S. Steel Corp."

flood aid — A National Production Authority directive permitting flood area dealers up to 130 pct of badly needed steel products has American Steel & Wire Co. plants working overtime. An estimated 1300 tons of nails, staples, barbed wire and fence posts are needed in the Missouri Valley flood-stricken area.

start mine development—Preliminary work has been started by Bethlehem Steel Co. on an iron ore deposit at Marmora, in eastern Ontario. The company hopes to get 400,000-ton-a-year production from the long known deposit. Its location, practically in the Lackawanna Plant's back yard, will help to cut down freight expenses. Bethlehem has also started to sink a shaft at its mine near Morgantown, Pa., another back yard operation.

sales picture brighter—Gas appliance people expect their sales to jump during the rest of this year because of relaxed credit controls and seasonal sales factor. Relaxing of proposed restrictions on natural gas use has also brought a surge of optimism to their industry.



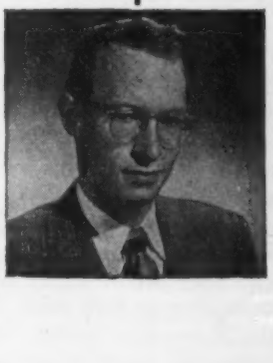
District Operating Rates—Per Cent of Capacity †

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Aug. 12	96 0*	104.5	100.0*	101.0	105 0	104.0	101.0*	106.0	100.0*	98.0	101 0	91 5	111.0	100 0*
Aug. 19	97 0	104.5	100.0	101.0	108.0	40 0**	99.0	106.0	105.0	98.0	94.0	90.5	111.0	98.0**

† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.
* Revised.
** Tentative

nonferrous metals

outlook and market activities



by R. Hatschek

NONFERROUS METAL PRICES

	Aug. 15	Aug. 16	Aug. 17	Aug. 18	Aug. 20	Aug. 21
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.03	$1.03	$1.03	....	$1.03	$1.03*
Zinc, East St. Louis	17.50	17.50	17.50	17.50	17.50	17.50
Lead, St. Louis	16.80	16.80	16.80	16.80	16.80	16.80

*Tentative.
Note: Quotations are going prices.

Stockpile In Use—Biggest occurrence in the nonferrous field last week was the announcement that President Truman has authorized the release of up to 25,000 tons of copper from the government stockpile. Some 10,000 tons have already gone to private industry to help alleviate the acute shortage of the strategic metal. The mechanics of the system work like this: Metal will be released, as needed, to General Services Administration and will then go to industry on allocation directives of the National Production Authority.

Must Be Replaced—All of the copper so released must be replaced in the stockpile by June 30, 1952, unless it is deemed contrary to defense interests. Aiding defense production when metal is scarce is the primary purpose of the stockpile and industry has been requesting copper from the government for many months, claiming that the shortage is acute enough to warrant such a release. The immediate incident which triggered the White House action was the Garfield Smelter strike, which caused the loss of an estimated 10,000 tons of copper production.

Strike Postponed—The strike scheduled to hit Kennecott Copper Corp. this Monday was postponed late last week in order to give more time for discussions. The action was at government request but labor officials stated that a new date would be set if terms could not be reached. The International Union of Mine, Mill and Smelter Workers has set Aug. 27 as the date for their general walkout in the nonferrous industry. Generally speaking, the labor picture in copper today is a mighty dim view of what lengths unions can go to in order to force acceptance of their demands.

Imports Off—Imports of refined copper in cathodes and shapes, copper contained in ore, matte and regulus, and blister copper totaled 246,108 tons for the first half of this year. This is a 24.9 pct drop from the first 6 months of 1950. Here, then, are the two reasons why copper is in such poor supply—almost 82,000 tons less imports and another 10,000 tons lost through a strike—and all of this on top of fantastic demand for the metal.

Refined lead imports dropped from 202,126 tons in the first half of last year to 82,725 tons for the like period this year, a drop of 59.1 pct and imports of slab zinc fell 38.3 pct from the first half of 1950 when 76,788 tons were brought in to 47,388 tons in the same period in 1951. On the other hand, zinc content of ore and concentrates scored an 18.3 pct gain for the periods under consideration with 149,449 tons coming in during the first half of this year as against 126,286 in the January to June period of 1950.

Tariff Suspension Nears—Washington anticipates Senate passage of HR 4948, the bill suspending lead import duties. The House-approved measure would eliminate such tariffs until Apr. 1, 1953, or the end of the current emergency, provided that the New York price of the metal does not average less than 16⅞¢ per lb for any calendar month. The bill is quite similar to the copper tariff suspension which is now in effect.

Expect More Shutdowns—Secondary aluminum smelters are progressively getting into worse and worse shape. Percentage operations vary all over the place and one outfit which is now going at an estimated 50 pct expects to be completely shut down in another month if the situation does not improve. They have plenty of orders. They have long since forgotten about civilian orders and are trying desperately to keep up with rated defense work but the scrap situation is cutting them to pieces. Another worry is that the smelters have already lost much skilled help and are still losing more.

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MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Steel: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 75S-O, 75S-OAL, 41.8¢; 0.032 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.3¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate ¼ in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 66.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 28, 39.6¢ to $1.16; 36 to 38, 47.2¢ to $1.70.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 39.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 55¢.

Screw Machine Stock: Rounds, 11S-T3, ⅛ to 11/32 in., 53.5¢ to 42¢; ⅜ to 1½ in., 41.5¢ to 39¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 31.5¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 44¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 63-S-T-5, OD in in.: 1¼ to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., $1.42; 96 in., $1.522; 120 in., $1.902; 144 in., $2.284. Gage 0.24 x 28 in., 72 in., $1.379; 96 in, $1.839; 120 in., $2.299; 144 in., $2.759. Coiled Sheet: 0.019 in. x 28 in., 33.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in. 66¢; ⅛ in. 67¢; B & S Gage 10, 68¢; 12, 72¢; 14, 78¢; 16, 85¢; 18, 93¢; 20, $1.05; 22, $1.27; 24, $1.67. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1¼ to 1.749 in., 53¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base Up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢ 0.22 to 0.25 lb, 5.9 in., 59.3¢ 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 5 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb, ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ in. to 5/16, $1.40; 5/16 to ⅜, $1.26; ½ to ⅝, 86¢; 1 to 2 in., 76¢; 0.165 to $0.219, ⅝ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheet and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel and Monel

(Base prices, f.o.b.. mill)

	"A" Nickel	Monel
Sheets, cold rolled	77	60½
Strip, cold-rolled	83	63½
Rods and bars	73	58½
Angles, hot-rolled	73	58½
Plates	75	59½
Seamless tubes	106	93½
Shot and blocks	..	53½

Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	40.18	....	39.78
Copper, h-f	....	36.03	....
Copper, drawn	....	37.28	....
Low brass	38.47	38.16	....
Yellow brass	37.28	36.97	....
Red brass	38.86	38.55	....
Naval brass	42.27	36.33	37.59
Leaded brass	....	....	35.86
Comm'l bronze	40.18	39.87	....
Mang. bronze	45.77	39.80	41.36
Phos. bronze	59.42	59.67	....
Muntz metal	40.28	35.84	37.09
Nl silver, 10 pct	48.26	50.59	....

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	19.00
Aluminum pig	18.00
Antimony, American, Laredo, Tex.	42.00
Beryllium copper, 3.75-4.25% Be	$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be	$69.00
Bismuth, ton lots	$2.25
Cadmium, del'd	$2.55
Cobalt, 97-99% (per lb)	$2.10 to $2.17
Copper, electro, Conn. Valley	24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$200
Lead, St. Louis	16.80
Lead, New York	17.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb	24.50
Magnesium, sticks, 100 to 500 lb	42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$195-$200
Nickel electro, f.o.b. N.Y. warehouse	59.58
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel	52.75
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	90.16
Tin, New York	$1.03
Titanium, sponge	$5.00
Zinc, East St. Louis	17.50
Zinc, New York	18.25
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	29.00
No. 120	28.50
No. 123	28.00
80-10-10 ingot	
No. 305	34.00
No. 315	32.00
88-10-2 ingot	
No. 210	40.00
No. 215	38.50
No. 245	37.00
Yellow ingot	
No. 405	25.50
Manganese bronze	
No. 421	32.75

Aluminum Ingot

(Cents per lb, 10,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	20.6
0.60 copper, max.	20.4
Piston alloys (No. 122 type)	21.2
No. 12 alum. (No. 2 grade)	19.5
108 alloy	20.6
195 alloy	20.8
13 alloy	20.8
ASX-679	20.5

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	18.00
Grade 2—92-95%	17.75
Grade 3—90-92%	17.25
Grade 4—85-90%	16.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	39½
Electrodeposited	33½
Rolled, oval, straight, delivered	38½
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34½
Zinc, oval	26½
Ball anodes	25½
Nickel 99 pct plus	
Cast	76.00
Rolled, depolarized	77.00
Cadmium	$2.80
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	97½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz	67¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21½	20¾
Yellow Brass	19¼	17⅞
Red brass	20¼	19⅝
Comm. bronze	20½	19¾
Mang. bronze	18½	17⅝
Brass rod ends	18⅞	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25*
Radiators	16.50

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	19.50
No. 1 comp. turnings	19.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	15.50
Aluminum	
Mixed old cast	9.75
Mixed new clips	11.00
Mixed turnings, dry	9.50
Pots and pans	9.25

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	18¾—19¼
No. 2 heavy copper and wire	17¼—17¾
Light copper	16 —16½
New type shell cuttings	16 —16½
Auto radiators (unsweated)	14¼—14¾
No. 1 composition	18 —18½
No. 1 composition turnings	17¾—18
Unlined red car boxes	16¾—17¼
Cocks and faucets	15½—16
Mixed heavy yellow brass	12 —12½
Old rolled brass	15 —15½
Brass pipe	16 —16½
New soft brass clippings	16 —16½
Brass rod ends	15½—16
No. 1 brass rod turnings	15 —15½

Aluminum

Alum. pistons and struts	6½— 7½
Aluminum crankcases	7½— 8
2S aluminum clippings	10½
Old sheet and utensils	7½— 8
Borings and turnings	5 — 6
Misc. cast aluminum	7½— 8
Dural clips (24S)	10 —11

Zinc

New zinc clippings	12¼—12½
Old zinc	9 — 9¼
Zinc routings	5¾— 6
Old die cast scrap	5¾— 6

Nickel and Monel

Pure nickel clippings	35 —36
Clean nickel turnings	35 —36
Nickel anodes	35 —36
Nickel rod ends	35 —36
New Monel clippings	28 —29
Clean Monel turnings	20 —21
Old sheet Monel	28 —29
Nickel silver clippings, mixed	13 —14
Nickel silver turnings, mixed	12 —13

Lead

Soft scrap, lead	14 —14½
Battery plates (dry)	9½—10

Magnesium

Segregated solids	15 —16
Castings	14 —15

Miscellaneous

Block tin	85 —90
No. 1 pewter	60 —65
No. 1 auto babbitt	48 —50
Mixed common babbitt	16¼—16½
Solder joints	23 —24
Siphon tops	48 —50
Small foundry type	20½—21
Monotype	18¼—18½
Lino. and stereotype	17½—18
Electrotype	15 —15½
Hand picked type shells	8¾— 9
Lino. and stereo. dross	8¾— 9
Electro. dross	5 — 5¼

SCRAP *iron and steel*

markets
prices
trends

If auto cutbacks come Detroit may have to rely more heavily on allocations . . . Cast demand remains weak.

The gaunt spectre of a severer scrap shortage because of cutbacks in auto production is staring Detroit area mills in the face. Slowing the heartbeat of auto assembly lines through controls over the basic metals is making the scrap trade uneasy. An important source of industrial scrap may shrink suddenly and a deficit may open up.

How much scrap consumers in that area get depends on how faithfully National Production Authority hews to its allocations system credo that the nation's available scrap supply shall be distributed equally so that mills all over can operate at about the same rate.

From the frenzied allocations activity of the past few months it appears that NPA is intent on distributing scrap evenly. Thus allocations may fill Detroit's scrap needs. Auto plant shutdowns are hinted at and defense work is not stepping into the breach quickly enough to assure that dislocations will not occur.

Cast iron demand in most areas is weak. Many reasons are advanced. Some are that foundry output slows in the summer time, demand for foundry products is off, vacations, not enough DO orders reaching the field. Cast will regain its market strength in the fall, the trade feels.

PITTSBURGH—The market has tightened up again. Scrap that was flowing freely several weeks ago is harder to find. Best guess is that the metal has found its way into other districts through allocations and more urgent need. Some mills here are once again living off relatively skimpy stockpiles. As one buyer put it, "I haven't worn a satisfied look for months, and don't expect to take it out of the moth balls for a long time to come."

CHICAGO—Mill inventories in the area have increased slightly in the last several weeks but not enough scrap is coming out to improve the forbidding fall and winter outlook. Steel plants are desperately trying to pick up good heavy scrap which is almost unobtainable and some are reported to be losing some production by the use of lighter material. Quantities of heavy scrap generated by railroads, ship breakers and bridge builders have fallen way below the levels of last year at this time. The cast market continues quiet with some quarters predicting a terrific scramble when foundries come back heavily into the market this fall.

PHILADELPHIA—Last week was a very quiet one in this district's scrap trade. Shipments to mills were off and yard output also slackened. The extremely hot weather is generally blamed as the cause and mills have not yet started to gripe about it. If this reduced activity should be prolonged by a couple of weeks the immediate situation would get quite rough. Demand for cast material showed signs of further slackening.

NEW YORK—Hot weather is not the only reason the market here is slower than last month. Some in the trade put some of the blame on plant vacations, the confusion of allocations, and a continuing shortage of good heavy scrap. A great deal of this heavy material has slipped easily into the allocations system. The "free" market thus consists of lighter dealer scrap. Demand for cast remains soft. Labor Day holidays coming up will slow collections further.

DETROIT—Reports that dealers would soon be placed under allocation were given a boost last week as two local dealers are reported to have been placed under government supervision. Meanwhile, many dealers were wondering (1) how they will be able to cover any shortages they may have in the market? (2) What a severe cut in auto output would do to an already short market? Reports of rejections of scrap by mills continue to come in. Available information indicates local mills have made little if any headway in building scrap supplies for the winter months.

CLEVELAND—Mills here are on a car to furnace basis on scrap. One plant, needing 45,000 tons a month, gets 40 pct of its scrap on allocation. It is just holding its own and a letdown in sh ments would mean shutdown. Some f that red tape of allocations may be tarding the scrap flow. About 850 tons streetcar rails have been removed allocated locally and another allocati for 2500 tons has just been received. public will shut down one of its Youn town blast furnaces on Sept. 1 repairs.

ST. LOUIS—Scrap receipts are off estimated 25 pct for the first three we of August as compared with the su period last month. Factors in the decl are the floods, extreme hot weather the South and Southwest, and ho agricultural activity. Mill stocks are l Foundry grades remain weak.

BIRMINGHAM — Heavy melting s scrap is just about as tight as ever this area, although allocations have ea the situation for the two largest buye Cast scrap, however, is plentiful brokers declare it is strictly a buye market. Much of the cast scrap com into the district is being re-shipped Northern and Eastern users.

CINCINNATI—Allocations in this d trict have covered practically all op hearth grades for some time. Elec furnace grades are almost in the m fix. Only borings and turnings rem "free." Foundries receiving scrap fr the West Coast just manage to s ahead of the game. Stocks do not ext over a few days. Scrap drives have as yet brought much usable scrap t the market.

BOSTON—All grades of scrap are m ing along well with the single exceptio cast material. Shipments of cast have taken a substantial drop but underlying strength of the market prevented prices from falling below c ings. The main reason for the inacti in cast is that users of these grades well stocked with scrap.

BUFFALO—Temporary improvement the steel scrap situation here was not to gloat about. It was caused by the sh down of 28 openhearths at Bethleh Lackawanna plant following sicken walkout of South Buffalo Railway rail ployees. Elsewhere, improvement in flow of scrap was maintained. One continued to build up its stockpiles. A 5000 tons of scrap came in from the L via the canal. Lake shipments were in their lull.

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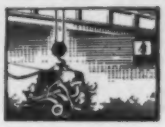

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

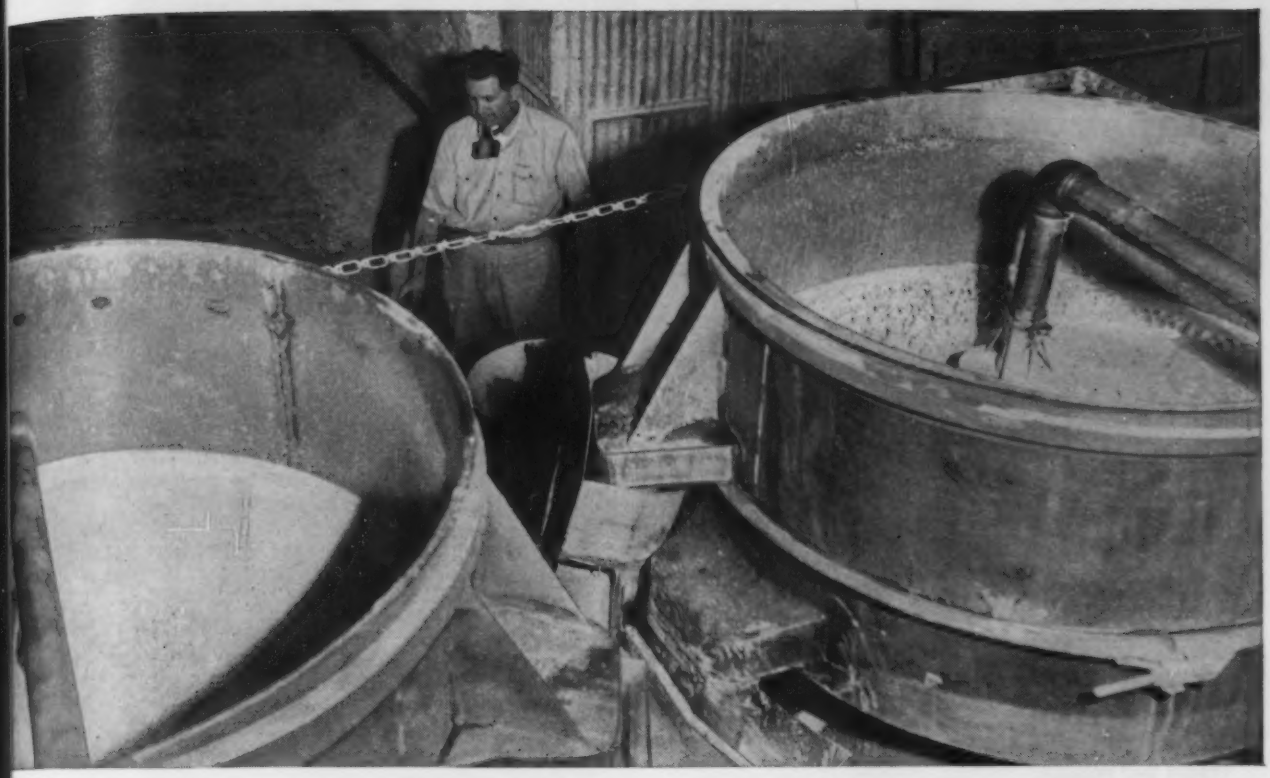
Berman

Iron and Steel

SCRAP PRICES

(Maximum basing point prices, per gross ton, a
set by OPS, effective Feb. 7, 1951. Shipping poi
and delivered prices calculated as shown below.

| Switching Charge (Dollars per gross ton) → | | $0.99 | .76 | .63 | .66 | .75 | .61 | .75 | .70 | .75 | .61 | .63 | .65 | .75 | .70 | 1.34 | .79 | .60 | .20 | .51 | .51 | .20 | .82 | .47 | .51 | .51 | .51



Shaking the bugs out of a new screening idea

When Southwestern Engineering Company, of Los Angeles, came up with the idea of a screen separator with "bumps *and* grinds"—bouncing *and* vibrating action—they knew they had something.

Something that might speed up sluggish separating processes tremendously. In oil, for example, where the "sluggard" is mud... in fruit processing where it's pectin, juices and purees... in ceramics where it's a silica-clay-talc-water slurry called "slip."

The idea was swell. But working it out, finding the right metal for the cylinders, was a lulu.

They'd try one. It wouldn't meet the acid test ...quite. And would contaminate some products ever so slightly, but ever so disastrously.

They'd try another. Tons of jiggling mix would eventually break its back.

Still another. The cylinders would keep splitting at the seams.

Finally, they tried Monel. And they were in. No more trouble, no matter how much machines were overloaded or over-speeded!

First to take advantage of this new Sweco development was Gladding McBean & Co.

They installed the two Sweco separators shown here to screen clay slip for their famous "Hermosa" wall and floor tile. And by so doing, they improved their product because they were able to use a finer clay ... boosted production because they could handle slip with only 40% instead of 51% water (thereby saving about 35% on fuel costs in the subsequent drying)...and increased the life of the screen cloth from *4 days to 26 months!*

Now what about your metal problem?

Could one or another of the Inco Nickel alloys help solve it? Very possibly. Write us about it. Even though Nickel is being diverted to defense, we are ready right now to help you with ideas and suggestions for your present production and future planning.

The International Nickel Company, Inc.
67 Wall Street, New York 5, N. Y.

EMBLEM OF SERVICE
NICKEL INCO ALLOYS

MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL
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Comparison of Prices

Steel prices in this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Aug. 21, 1951	Aug. 14, 1951	July 24, 1951	Aug. 22, 1950
Hot-rolled sheets	3.60	3.60	3.60	3.35
Cold-rolled sheets	4.35	4.35	4.35	4.10
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.40
Hot-rolled strip	3.50	3.50	3.50	3.25
Cold-rolled strip	4.75	4.75	4.75	4.21
Plate	3.70	3.70	3.70	3.50
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	36.75	36.75	36.75	34.50
Tin and Ternplate: (dollars per base box)				
Tinplate (1.50 lb.) cokes.	$8.70	$8.70	$8.70	$7.50
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	6.60
Special coated mfg. ternes	7.50	7.50	7.50	6.35
Bars and Shapes: (cents per pound)				
Merchant bars	3.70	3.70	3.70	3.45
Cold finished bars	4.55	4.55	4.55	4.145
Alloy bars	4.30	4.30	4.30	3.95
Structural shapes	3.65	3.65	3.65	3.40
Stainless bars (No.302)	31.50	31.50	31.50	30.00
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.85	4.85	4.85	4.50
Rails: (dollars per 100 lb)				
Heavy rails	$3.60	$3.60	$3.60	$3.40
Light rails	4.00	4.00	4.00	3.75
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$56.00	$56.00	$56.00	$54.00
Slabs, rerolling	56.00	56.00	56.00	54.00
Forging billets	66.00	66.00	66.00	63.00
Alloy blooms billets, slabs	70.00	70.00	70.00	66.00
Wire Rod and Skelp: (cents per pound)				
Wire rods	4.10	4.10	4.10	3.85
Skelp	3.35	3.35	3.35	3.15

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*

Pig Iron: (per gross ton)	Aug. 21, 1951	Aug. 14, 1951	July 24, 1951	Aug. 22, 1950
No. 2 foundry, del'd Phila.	$57.77	$57.77	$57.77	$51.76
No. 2, Valley furnace	52.50	52.50	52.50	46.50
No. 2, Southern Cin'ti	55.58	55.58	55.58	49.08
No. 2, Birmingham	48.88	48.88	48.88	42.38
No. 2, foundry, Chicago†	52.50	52.50	52.50	46.50
Basic del'd Philadelphia	56.92	56.92	56.92	50.92
Basic, Valley furnace	52.00	52.00	52.00	46.00
Malleable, Chicago†	52.50	52.50	52.50	46.50
Malleable, Valley	52.50	52.50	52.50	46.50
Charcoal, Chicago	70.56	70.56	70.56	68.56
Ferromanganese‡	186.25	186.25	186.25	173.40

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap: (per gross ton)	Aug. 21, 1951	Aug. 14, 1951	July 24, 1951	Aug. 22, 1950
No. 1 steel, Pittsburgh	$44.00*	$44.00*	$44.00*	$45.75
No. 1 steel, Phila. area	42.50*	42.50*	42.50*	38.50
No. 1 steel, Chicago	42.50*	42.50*	42.50*	40.50
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	40.50
Low phos. Young'n	46.50*	46.50*	46.50*	46.75
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	48.75
No. 1 cast, Philadelphia	49.00†	49.00†	49.00†	42.50
No. 1 cast, Chicago	49.00†	49.00†	49.00†	50.50

*Basing Pt. †Shipping Pt.
Not including broker's fee after Feb. 7, 1951.

Coke: Connellsville: (per net ton at oven)	Aug. 21, 1951	Aug. 14, 1951	July 24, 1951	Aug. 22, 1950
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.25
Foundry coke, prompt	17.75	17.75	17.75	16.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	22.60
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.03†	$1.03	$1.06	$1.06
Zinc, East St. Louis	17.50	17.50	17.50	15.00
Lead, St. Louis	16.80	16.80	16.80	13.80
Aluminum, virgin	19.00	19.00	19.00	17.50
Nickel, electrolytic	59.58	59.58	59.58	51.22
Magnesium, ingot	24.50	24.50	24.50	22.50
Antimony, Laredo, Tex.	42.00	42.00	42.00	24.50

†Tentative. *Revised.

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1949, issue.)

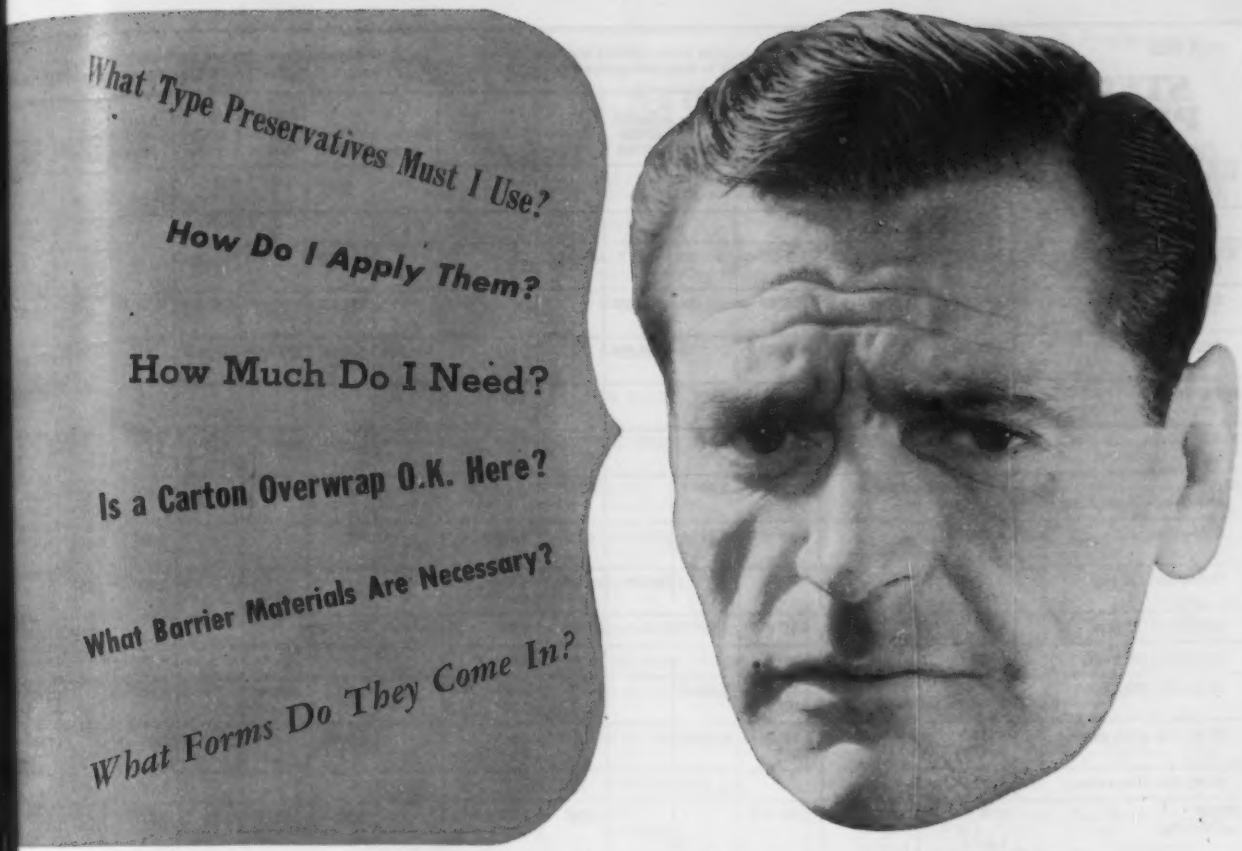
	Finished Steel Base Price	Pig Iron	Scrap Steel
Aug. 21, 1951	4.131¢ per lb.	$52.69 per gross ton	$43.00 per gross ton
One week ago	4.131¢ per lb.	52.69 per gross ton	43.00 per gross ton
One month ago	4.131¢ per lb.	52.69 per gross ton	43.00 per gross ton
One year ago	3.837¢ per lb.	46.61 per gross ton	41.58 per gross ton

	Finished Steel Base Price High		Finished Steel Base Price Low		Pig Iron High		Pig Iron Low		Scrap Steel High		Scrap Steel Low	
1951	4.131¢	Jan. 2	4.131¢	Jan. 2	$52.69	Jan. 2	$52.69	Jan. 2	$47.75	Jan. 30	$43.00	Feb. 7
1950	4.131¢	Dec. 1	3.837¢	Jan. 3	52.69	Dec. 12	45.88	Jan. 3	45.13	Dec. 19	26.25	Jan. 3
1949	3.837¢	Dec. 27	3.3705¢	May 3	46.87	Jan. 18	45.88	Sept. 6	43.00	Jan. 4	19.33	June 28
1948	3.721¢	July 27	3.193¢	Jan. 1	46.91	Oct. 12	39.58	Jan. 6	43.16	July 27	39.75	Mar. 9
1947	3.193¢	July 29	2.848¢	Jan. 1	37.98	Dec. 30	30.14	Jan. 7	42.58	Oct. 28	29.50	May 20
1946	2.848¢	Dec. 31	2.464¢	Jan. 1	30.14	Dec. 10	25.37	Jan. 1	31.17	Dec. 24	19.17	Jan. 1
1945	2.464¢	May 29	2.396¢	Jan. 1	25.37	Oct. 23	23.61	Jan. 2	19.17	Jan. 2	18.92	May 22
1944	2.396¢		2.396¢		$23.61		$23.61		19.17	Jan. 11	15.76	Oct. 24
1943	2.396¢		2.396¢		23.61		23.61		$19.17		$19.17	
1942	2.396¢		2.396¢		23.61		23.61		19.17		19.17	
1941	2.396¢		2.396¢		$23.61	Mar. 20	$23.45	Jan. 2	$22.00	Jan. 7	$19.17	Apr. 16
1940	2.30467¢	Jan. 2	2.24107¢	Apr. 16	23.45	Dec. 23	22.61	Jan. 2	21.83	Dec. 30	16.04	Apr. 9
1939	2.35367¢	Jan. 3	2.26689¢	May 16	22.61	Sept. 19	20.61	Sept. 12	22.50	Oct. 3	14.08	May 16
1938	2.58414¢	Jan. 4	2.27207¢	Oct. 18	23.25	June 21	19.61	July 6	15.00	Nov. 22	11.00	June 7
1937	2.58414¢	Mar. 9	2.32263¢	Jan. 4	32.25	Mar. 9	20.25	Feb. 16	21.92	Mar. 30	12.67	June 8
1936	2.32263¢	Dec. 28	2.05200¢	Mar. 10	19.74	Nov. 24	18.73	Aug. 11	17.75	Dec. 21	12.67	June 9
1932	1.89196¢	July 5	1.83910¢	Mar. 1	14.81	Jan. 5	13.56	Dec. 6	8.50	Jan. 12	6.43	July 5
1929	2.31773¢	May 28	2.26498¢	Oct. 29	18.71	May 14	18.21	Dec. 17	17.58	Jan. 29	14.08	Dec. 9

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.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IRON AGE

STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middletown	Youngstown	Bethlehem	Buffalo	Conshohocken	Johnstown	Sparrows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	$52.00[1]													
Alloy, net ton	$54.00[1,17]													$54.00[31]
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	$56.00[1,5]	$56.00[1]	$56.00[1]						$56.00[3]		$56.00[3]			
Carbon forging billets, net ton	$66.00[1,5]	$66.00[1,4]	$66.00[1]	$66.00[4]	$66.00[4]				$66.00[3,4]	$73.00[26]	$66.00[3]			$66.00[31]
Alloy, net ton	$70.00[1,17,6]	$70.00[1,4]	$70.00[1,6]		$70.00[4]			$70.00[3]	$70.00[3,4]	$77.00[26]	$70.00[3]			$73.00[31]
PIPE SKELP	3.35[1] 3.45[5]						3.35[1,4]							
WIRE RODS	4.10[2] 4.30[18]	4.10[2,4,33]	4.10[6]	4.10[2]			4.10[6]		4.10[65]		4.10[3]	4.20[3]		
SHEETS Hot-rolled (18 ga. & hvr.)	3.60[1,5,9,15] 3.75[28]	3.60[8,23]	3.60[1,6,8]	3.60[4,5]		3.80[7]	3.60[1,4,6] 4.00[19]		3.60[3]	4.00[26]		3.60[3]	4.30[22]	3.80[31] 4.40[47]
Cold-rolled	4.35[1,5,9,15,7]		4.35[1,6,8]	4.35[4,5]		4.35[7]	4.35[4,6]		4.35[3]			4.35[3]	5.05[22]	4.55[31]
Galvanized (10 gage)	4.80[1,9,15]		4.80[1,8]		4.80[4]	4.80[7]	5.50[44] 6.00[54]					4.80[3]	5.50[22]	
Enameling (12 gage)	4.65[1]		4.65[1,8]	4.65[4]		4.65[7]	4.65[6]						5.35[22]	
Long terne (10 gage)	5.20[9,15]		5.20[1]			5.20[7]	5.00[54]							
Hi str. low alloy, h.r.	5.40[1,5] 5.75[9]	5.40[1]	5.40[1,8] 5.90[6]	5.40[4,5]			5.40[1,4,13] 5.90[6]		5.40[3]	5.65[26]		5.40[3]		5.95[13]
Hi str. low alloy, c.r.	6.55[1,5] 6.90[9]		6.55[1,8] 7.05[6]	6.55[4,5]			6.55[4] 7.05[6]		6.55[3]			6.55[3]		7.10[13]
Hi str. low alloy, galv.	7.20[1]											6.75[3]		
STRIP Hot-rolled	3.60[9], 4.00[41,55], 3.75[28] 3.50[5,7]	3.50[66]	3.50[1,6,8]			3.50[7]	3.50[1,4,6] 4.00[13]		3.50[3,4]	3.90[26]	3.50[3]	3.50[3]		4.40[47] 3.80[13]
Cold-rolled	4.65[9,7,9] 5.00[28] 5.35[40,53,55]	4.90[8,66]	4.90[6]	4.65[2,5]		4.65[7]	4.65[4,6] 5.25[48,49] 5.35[13,40]		4.65[3]			4.65[3]		4.85[13] 5.45[47] 5.00[54,62]
Hi str. low alloy, h.r.	5.75[9]		5.50[1] 5.30[4], 5.80[6]				4.95[4], 5.50[1] 5.40[13], 5.80[6]		4.95[3]	5.55[26]		4.95[3]		5.95[13]
Hi str. low alloy, c.r.	7.20[9]			6.55[2] 6.70[5]			(6.20[4], 6.55[13] 7.05[6]		6.40[3]			6.40[3]		
TINPLATE† Cokes, 1.25-lb base box (1.50 lb, add 25¢)	$8.45[1,5,9,15]		$8.45[1,6,8]				$8.45[4]					$8.55[3]		
Electrolytic 0.25, 0.50, 0.75 lb box	0.25 lb base box, $7.15[1,4,5,8,9]; $7.25[3,11]; $7.35[23] 0.50 lb, add 25¢; 0.75 lb add 65¢													
BLACKPLATE, 29 gage Hollowware enameling	5.85[1] 6.15[18]		5.85[1]				5.30[4]							
BARS Carbon steel	3.70[1,5] 3.85[9]	3.70[1,4,33]	3.70[1,4,6,8]	3.70[4]	3.70[4]		3.70[1,4,6]		3.70[3,4]		3.70[3]			3.85[31]
Reinforcing	3.70[1,5]	3.70[4]	3.70[1,6,8]	3.70[4]			3.70[1,4,6]		3.70[3,4]		3.70[3]	3.70[3]		
Cold-finished	4.55[2,4,5,52,69,71]	4.55[3,23,70]	4.55[4,74,75]	4.55[3]	4.55[4,63]		4.55[6,57]		4.60[70]					4.70[64]
Alloy, hot-rolled	4.30[1,17]	4.30[1,4,23]	4.30[1,6,8]		4.30[4]		4.30[1,6]	4.30[3]	4.30[3,4]		4.30[3]			4.45[31] 4.65[12]
Alloy, cold-drawn	5.40[17,52,69,71,2]	5.40[4,23,69,70,73] 5.45[3]	5.40[4,73,74]		5.40[4,32]		5.40[6,28,57]	5.40[3]	5.40[3]					5.55[64]
Hi str. low alloy, h.r.	5.55[1,5]		5.55[1,8] 6.05[6]	5.55[4,5]			5.55[1] 6.05[6]	5.55[3]	5.55[3]		5.55[3]			
PLATE Carbon steel	3.70[1,5,15] 4.00[9]	3.70[1,33]	3.70[1,6,8]	3.70[4,5]			3.70[1,4,6] 3.95[13]		3.70[3]	4.15[26]	3.70[3]	3.70[3]	4.40[22]	
Floor plates	4.75[1]	4.75[1]	4.75[6]	4.75[5]						4.75[26]				
Alloy	4.75[1]	4.75[1]	4.75[1]				5.20[13]			5.05[26]	4.75[3]	4.75[3]		
Hi str. low alloy	5.65[1,5]	5.65[1]	5.65[1,8] 6.15[6]	5.65[4,5]			(5.65[4] 5.70[13] 6.15[6]			5.90[26]	5.65[3]	5.65[3]		
SHAPES, Structural	3.65[1,5] 3.90[9]	3.65[1,23]	3.65[1,8]					3.70[3]	3.70[3]		3.70[3]			
Hi str. low alloy	5.50[1,5]	5.50[1]	5.50[1,8] 6.00[6]				6.00[6]	5.50[3]	5.50[3]		5.50[3]			
MANUFACTURERS' WIRE Bright	4.85[2,5] 5.10[18]	4.85[2] 4.33,34		4.85[2]			4.85[6]	Kokomo—4.95[20] 4.85[35]			4.85[3]	4.95[3]	Duluth—4.85[2]	
PILING, Steel Sheet	4.45[1]	4.45[1]	4.45[6]						4.45[3]					

STEEL PRICES

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
			F=$79.00[10]		INGOTS Carbon forging, net ton
	$62.00[83]		F=$80.00[10]		Alloy, net ton
		$56.00[11]	F=$75.00[10]		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	$74.00[83]	$66.00[11]	F=$85.00[10] SF, LS, S=$85.00[82]	Geneva=$66.00[16]	Carbon forging billets, net ton
	$78.00[83]		F=$89.00[10] LA=$90.00[83]		Alloy net ton
					PIPE SKELP
	4.50[83]	4.10[4-11]	SF=4.90[2], F=4.90[19] LA=4.90[24-62]	(Worcester=4.40[2] Minnequa=4.35[14] Portsmouth=4.30[20]	WIRE RODS
		3.60[4-11]	SF, LA=4.30[24] F=4.55[19]	Niles=5.25[84], Geneva=3.70[16] Ashland=3.60[7]	SHEETS Hot-rolled (18 ga. & hvr.)
		4.35[11]	SF=5.30[24] F=5.30[19]		Cold-rolled
		4.60[4-11]	SF, LA=5.55[24]	Ashland=4.80[7] Kokomo=5.20[30]	Galvanized (10 gage)
				Ashland=4.65[7]	Enameling (12 gage)
					Long ternes (10 gage)
		5.40[11]	F=6.35[19]		Hi str. low alloy, h.r.
			F=7.50[19]		Hi str. low alloy, c.r.
					Hi str. low alloy, galv.
4.10[83]	4.90[83]	3.50[4-11]	SF, LA=4.25[24-62] F=4.75[19], S=4.50[82]	Atlanta=4.05[85] Minnequa=4.55[14] Ashland=3.50[7]	STRIP Hot-rolled
			F=6.30[19] LA=6.40[27]	New Haven=5.15[3], 5.85[88] Trenton=6.00[45]	Cold-rolled
		5.30[11]	(F=6.20[19] SF, LA=6.05[82] S=6.30[82]		Hi str. low alloy, h.r.
			F=6.95[19]		Hi str. low alloy, c.r.
		$8.55[11]	SF=9.20[24]		TINPLATE Cokes, 1.25-lb base box (1.50 lb, add 25¢)
					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
4.20[83]	4.10[83]	3.70[4-11]	(SF, LA=4.40[24]	Atlanta=4.25[85] Minnequa=4.15[14]	BARS Carbon steel
4.20[83]	4.10[83]	3.70[4-11]	SF, S=4.45[82] F=4.40[19], LA=4.40[82]	Atlanta=4.25[85] Minnequa=4.50[14]	Reinforcing
			LA=6.00[4]	Newark=5.00[89] Putnam=5.10[89] Hartford=5.10[4]	Cold-finished
4.30[83]	4.70[83]		LA=5.35[82] F=5.35[19]		Alloy, hot-rolled
				(Newark=5.75[89] Worcester=5.75[2] Hartford=5.85[4]	Alloy, cold-drawn
		5.55[11]	F=6.80[19] SF, S=6.30[82] LA=6.25[82]	(Claymont=4.15[29] Coatesville=4.15[21] Harrisburg=4.95[36] Minnequa=4.50[14] Geneva=3.70[16]	Hi str. low alloy, h.r.
	4.10[83]	3.70[4-11]	F=4.30[19] S=4.60[82]		PLATE Carbon steel
				Harrisburg=5.95[36]	Floor plates
			F=5.70[19]	Coatesville=5.25[21] Claymont=4.85[29]	Alloy
		5.85[11]	F=6.25[19] S=6.55[82]	Geneva=5.65[16]	Hi str. low alloy
4.20[83]	4.05[83]	3.60[4] 3.85[11]	SF=4.20[82] F=4.25[16] LA=4.25[24-62] S=4.30[82]	Geneva 3.65[16] Minnequa 4.10[14] Phoenixville=4.95[56]	SHAPES, Structural
		5.50[11]	SF=6.10[62-19] SF=6.00[82] LA=6.05[82]	Geneva=5.50[16]	Si str. low alloy
5.40[83]	5.25[83]	4.85[4-11]	SF, LA=5.80[24]	(Atlanta=5.10[85] Worcester=5.15[2] Minnequa=5.10[14] Portsmouth=5.25[20]	MANUFACTURERS' WIRE Bright

†Special coated mfg ternes deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $2.20 from 1.25-lb coke base box.

Key to Steel Producers

1 U. S. Steel Co., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Steel Corp., Oakland, Calif.
20 Portsmouth Div., Detroit Steel Corp., Detroit
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calstrip Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Claymont Steel Corp., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling St. & Carbide Corp., McKeesport
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Fran.
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wycoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit
85 Wickwire Spencer Steel, Buffalo
86 Angell Nail and Chaplet, Cleveland
87 Mid-States Steel & Wire, Crawfordsville, Ind.
88 National Supply, Pittsburgh, Pa.
89 Wheatland Tube Co., Wheatland, Pa.
90 Mercer Tube & Mfg. Co., Sharon, Pa.
91 Woodward Iron Co., Woodward, Ala.
92 Sloss-Sheffield Steel & Iron Co., Birmingham
93 Hanna Furnace Corp., Detroit
94 Interlake Iron Corp., Cleveland
95 Lone Star Steel Co., Dallas
96 Mystic Iron Works, Everett, Mass.
97 Jackson Iron & Steel Co., Jackson, O.
98 Globe Iron Co., Jackson, O.
99 Pittsburgh Coke & Chemical Co., Pittsburgh
100 Shenango Furnace Co., Pittsburgh
101 Tennessee Products & Chem. Corp., Nashville
102 Koppers Co., Inc., Granite City, Ill.
103 Page Steel & Wire Div., American Chain & Cable, Monessen, Pa.
104 Wallingford Steel Co., Wallingford, Conn.
105 Tonawanda Iron Div., N. Tonawanda, N. Y.

STAINLESS STEELS

Base price cents per lb, f.o.b. mill.

Product	301	302	303	304	316	321	347	410	416	430
Ingots rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs billets rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs die blocks rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars wires structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 4, 5¢), 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 45.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38 (type 316 add 4, 5¢); W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, Pa., 13; Butler, Pa., 7; Wallingford, Conn., 104.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28; Monessen, 103; Syracuse, N. Y., 17; Bridgeville, Pa., 59.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44; Syracuse, N. Y., 17.

Plates: Brackenridge, Pa., 28 (type 416 add ½¢); Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 17; Syracuse, 17; Ferndale, Mich., 28; Washington, Pa., 39.

Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1; Syracuse, N. Y., 17.

•ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 Series.

WASHINGTON STEEL—Slightly lower on 300 Series except where noted.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails Base Col.	Woven Wire Fence 9-15½ ga. Base Col.	Fence Posts Base Col.	Single Loop Bale Ties Base Col.	Twisted Barbless Wire Base Col.	Gal. Barbed Wire Base Col.	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Gal. (1) ¢/lb.
Alabama City-4	118	126		123		136	5.70	5.95
Aliquippa, Pa.-8	118	132			136	140	5.70	6.15
Atlanta-65	121	133		126	126	143	5.95	6.40
Bartonville-34	118	130		123	143	143	5.70	6.15
Buffalo-85							4.85	
Cleveland-86	125							
Cleveland-2							5.70	6.15
Crawfordsville-67		132				145	5.95	6.40
Donora, Pa.-2	118	130		123	140	140	5.70	6.15
Duluth-2	118	130		123	140	140	5.70	6.15
Fairfield, Ala.-11	118	130		123		140	5.70	6.15
Houston-83	126	138				148	6.10	6.55
Johnstown, Pa.-3	118	130			140		5.70	6.15
Joliet, Ill.-2	118	130		123		140	5.70	6.15
Kokomo, Ind.-30	120	132		125	138	142	5.80	6.05
Los Angeles-62							6.65	
Kansas City-83	130			135		152	6.30	6.75
Minnequa-14	123	138	130	128	146	146	5.95	6.45
Monessen-18	124	135				145	5.95	6.40
Moline, Ill.-4			136					
Pittsburg, Cal.-24	137			147	156	160	6.65	6.80
Portsmouth-20	124	137			147	147	6.10	6.60
Rankin, Pa.-2	118	130			140	140	5.70	6.15
So. Chicago, Ill.-4	118	128	140	123		136	5.70	5.95
S. San Fran.-14				147		160	6.65	7.10
Sparrows Pt.-3	120			125	142	142	5.80	6.25
Sterling, Ill.-33	118	130		123	140	140	5.70	6.15
Struthers, Ohio-6							5.70	6.15
Torrance, Cal.-24	138						6.65	
Worcester-2	124						6.00	6.45
Williamsport, Pa.-51			150					

Cut Nails, carloads, base, $7.35 per 100 lb (less 20¢ to jobbers), at Conshohocken, Pa., (26), Wheeling, W. Va., (15), $7.15.

(1) Alabama City and So. Chicago do not include zinc extra.

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago.	$105.30 to $108.80
6 to 24-in., del'd N. Y.	108.50 to 109.50
6 to 24-in., Birmingham.	91.50 to 96.00
6-in and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	123.00 to 130.00

Class "A" and as pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about $200 per net ton

	BUTTWELD ½ In. Blk.	Gal.	¾ In. Blk.	Gal.	1 In. Blk.	Gal.	1¼ In. Blk.	Gal.	1½ In. Blk.	Gal.	2 In. Blk.	Gal.	2½-3 In. Blk.	Gal.	SEAMLESS 2 In. Blk.	Gal.	2½-3 In. Blk.	Gal.
STANDARD T. & C.																		
Sparrows Pt.-3	34.0	12.0	37.0	16.0	39.5	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0				
Cleveland-4	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0				
Oakland-19	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0				
Pittsburgh-5	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	9.0	32.5	11.5
Pittsburgh-10	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	21.5	9.5	32.5	12.5
St. Louis-32	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0				
Sharon-90	36.0	13.0	39.0	17.0	41.5	20.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.0				
Pittsburgh-88	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5		32.5	
Wheeling-15	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0				
Wheatland-89	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5				
Youngstown-6	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5
EXTRA STRONG, PLAIN ENDS																		
Sparrows Pt.-3	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0				
Cleveland-4	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0				
Oakland-19	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0				
Pittsburgh-5	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0
Pittsburgh-10	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0
St. Louis-32	34.5	14.0	38.5	18.0	40.5	21.5	41.0	22.0	41.5	23.0	42.0	23.5	42.5	24.0				
Sharon-90	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	22.0	43.0	22.5	43.5	23.0				
Pittsburgh-88	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0		33.0	
Wheeling-15	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0				
Wheatland-89	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5				
Youngstown-6	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	26.0	29.0	10.0	33.0	14.0

Galvanized discounts based on zinc at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢ per lb.

Threads only, buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 2½ higher discount. Buttweld jobbers' discount, 5 pct.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Axles	Screw Spikes	Tie Plates	Track Bolts
Bessemer-1	3.60	4.00	4.70					
Chicago-4				6.15				
Ensley-11	3.60	4.00						
Fairfield-11		4.00	4.40			8.00	4.50	
Gary-1	3.60	4.00					4.50	
Ind. Harbor-8	3.60		4.70	6.15	5.60	8.00	4.50	
Johnstown-3		4.00			5.60	8.00		
Joliet-1		4.00	4.70					
Kansas City-83				6.40				
Lackawanna-3	3.60	4.00	4.70			9.00	4.50	
Lebanon-3				6.15				
Minnequa-14	3.60	4.50	4.70	6.15		9.00	4.50	
Pittsburgh-77						9.35		
Pittsburgh-78								
Pittsburgh-5				6.15				
Pittsburgh-24							4.65	
Seattle-62				6.65			4.65	
Steelton-3	3.60		4.70				4.50	
Struthers-6				6.15				
Torrance-24							4.65	
Youngstown-4				6.15				

BOILER TUBES

$ Per 100 ft., cut, 10 to 24

F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. We H.R.	Elec. We C.D.
Babcock & Wilcox	2	13	22.67	26.86	21.90	25.
	2½	12	30.48	35.84	29.57	34.
	3	12	33.90	39.90	32.89	38.
	3½	11	42.37	49.80	41.10	48.
	4	10	52.60	61.80	51.03	60.
National Tube	2	13	21.62	26.48		
	2½	12	29.65	36.32		
	3	12	34.00	41.64		
	3½	11	40.34	49.41		
	4	10	51.21	62.72		
Pittsburgh Steel	2	13		27.00		
	2½	12	36.48	37.15		
	3	12	34.95	42.50		
	3½	11	41.48	50.54		
	4	10	52.65	64.16		

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Price, net ton; Effective CaF_2 content:

70% or more. $43.

60% or less. 40.

UNIVERSITY OF MICHIGAN LIBRARIES

WAREHOUSES

Base price, f.o.b., dollars per 100 lb. *(Metropolitan area delivery add 20¢ except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Philadelphia, add 25¢; New York, add 30¢).

Cities	Sheets			Strip		Plates	Shapes	Bars		Alloy Bars			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed
...timore	5.60	6.84	7.49[2]–8.07	6.04	.....	5.80	6.14	6.04	6.84–6.89	10.24	10.54	11.89	12.19
...mingham*	5.60	6.40	6.75	5.55	.....	5.95	5.70	5.55	.....	.....	.....	.....	.....
...ston	6.20	7.00–7.25	7.74–8.29	6.15	8.50[4]	6.48–6.78	6.20	6.05	6.79–6.84	10.25	10.55	11.90–12.00	12.20–12.30
...falo	5.60	6.40	7.74–8.09	5.86	.....	6.05	5.80	5.60	6.40–6.45	10.15–10.85	10.45	11.80	11.95–12.10
...cago	5.60	6.40	7.75	5.55	.....	5.80	5.70	5.55	6.30	9.80	10.10	11.45	11.75
...cinnati*	5.67	6.44	7.39	5.80	.....	6.19	6.09	5.80	6.61	10.15	10.45	11.80	12.10
...eland	5.60	6.40	8.10	5.69	6.90	5.92	5.82	5.57	6.40	9.91	10.21	11.56	11.86
...roit	5.78	6.53	7.89	5.94	.....	5.99	6.09	5.84	6.56	10.11	10.41	11.76	12.06
...ston	7.00	8.25	.....	.....	.....	6.85	6.50	6.65	9.35	10.35	11.25	.....	12.75
...neapolis, del'd	6.00	6.80	8.15	5.95	.....	6.20	6.10	5.95	6.80	.....	.....	.....	.....
...sas City	6.00	6.80	7.45	6.15	7.50	6.40	6.30	6.15	7.00	10.40	10.70	12.05	12.35
...Angeles	6.35	7.90	7.85	6.40	9.45[6]	6.40	6.35	6.35	8.20	11.30	11.30	13.20	13.50
...mphis*	6.33–6.38	7.08–7.18	.....	6.33–6.38	.....	6.43–8.02	6.33–6.48	6.06–6.33	7.16–7.32	.....	.....	.....	.....
...waukee	5.74	6.54	7.89	5.85–6.59	.....	5.94	5.84	5.69	6.44–6.54	9.94	10.24	11.59	11.89
...Orleans*	5.70	6.59	.....	5.75	7.25	5.95	5.75	5.75	7.30	.....	.....	.....	.....
...York*	5.67–5.97	7.19[5]–7.24[1]	8.14[3]	6.29–6.89	8.63[4]	6.28–6.58	6.10	6.12	6.99	10.05–10.15	10.35–10.45	11.70–11.80	12.10–12.20
...folk	6.50[3]	.....	.....	.....	.....	6.50[3]	6.60[3]	6.55[3]	.....	.....	.....	.....	.....
...adelphia*	5.90	6.80	8.00	6.10	.....	6.05	5.90	6.05	6.86	9.90	10.20	.....	.....
...burgh	5.60	6.40	7.75	5.65–5.95	.....	5.75	5.70	5.55	6.15	9.80	10.10	11.45	11.75
...land	6.60–7.55	8.95	8.50–9.10	7.30	.....	6.80	6.95	6.90	.....	.....	12.15	.....	.....
...t Lake City	7.95	.....	9.70–10.50[2]	8.70–8.75	.....	8.05	6.75–8.30	7.95–8.65	9.00	.....	.....	.....	.....
...Francisco*	6.65	8.05[3]	8.55–8.90[2]	6.60	9.95[6]	6.50	6.45	6.45	8.20	11.30	11.30	13.20	13.20–13.50
...tle	7.05	8.60	9.20	9.05	.....	6.75	6.65	6.75	9.05	.....	.....	.....	.....
...Louis	5.80–5.85	6.65	8.00	5.80	8.00[4]–8.25	6.13	6.03	5.80	6.55–6.65	10.05	10.35	11.70	12.00
...Paul*	6.16	6.96	8.31	6.11	.....	6.36	6.26	6.11	6.96	10.36	10.66	12.01	12.31

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 9999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.
EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; (6) 2500 to 9999 lb.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Blast Furnace Silvery	Low Phos. Charcoal
...lehem-3	54.00	54.50	55.00	55.50	.....	.....	.....
...ingham-4	48.38	48.88	.....	.....	.....	.....	.....
...ingham-81	48.38	48.88	.....	.....	.....	.....	.....
...ingham-82	48.38	48.88	.....	.....	.....	.....	.....
...falo-4	52.00	52.50	53.00	.....	.....	.....	.....
...falo-83	52.00	52.50	53.00	.....	.....	63.75	.....
...ago-84	52.00	52.50	52.50	53.00	.....	.....	.....
...eland-3	52.00	52.50	52.50	53.00	57.00	.....	.....
...eland-4	52.00	52.50	52.50	.....	.....	.....	.....
...perfield, Tex.-95	48.00	48.50	48.50	.....	.....	.....	.....
...ton-94	52.00	52.50	52.50	53.00	.....	.....	.....
...ett, Mass.-96	52.00	52.50	52.50	53.00	.....	.....	.....
...ria-19	.....	55.25	55.75	.....	.....	.....	.....
...ova, Utah-16	58.00	58.50	.....	.....	.....	.....	.....
...nte City, Ill.-102	52.00	52.50	52.50	53.00	.....	.....	.....
...kard, Ohio-6	53.90	54.40	54.90	.....	.....	.....	.....
...ton, Utah-18	52.00	52.50	52.50	.....	.....	.....	.....
...ton, Ohio-97, 98	52.00	52.50	.....	.....	.....	.....	.....
...Tenn.-101	.....	.....	.....	.....	.....	62.50	.....
...ngton-18	.....	.....	.....	.....	.....	.....	68.00
...ville Island-99	54.00	.....	.....	.....	.....	.....	.....
...burgh-1	52.00	52.50	52.50	53.00	.....	.....	.....
...ersville-100	52.00	.....	.....	53.00	.....	.....	.....
...ton-3	52.00	52.50	52.50	53.00	.....	.....	.....
...eland-26	54.00	54.50	55.00	55.50	60.00	.....	.....
...ton-94	56.00	56.50	57.00	57.50	.....	.....	.....
...N. Y.-4	52.00	52.50	52.50	53.00	.....	.....	.....
...stown-8	54.00	54.50	55.00	.....	60.00	.....	.....
...Tonawanda, N. Y.-105	52.00	52.50	52.50	53.00	.....	.....	.....
		52.50	53.00				

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct, except low phos. 1.75 to 2.00 pct). Add 25¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery iron: Add $1.50 per ton for each 0.50 c over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer prices are $1 over comparable silvery iron.

REFRACTORIES

Fire Clay Brick *(F.o.b. works) Carloads, Per 1000*

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5)	$94.60
No. 1 Ohio	88.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	88.00
No. 2 Ohio	79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$94.60
Childs, Pa.	99.00
Hays, Pa.	100.10
Chicago District	104.50
Western Utah and Calif.	111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago	111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	16.50
Silica cement, net ton, bulk, Hays, Pa.	18.70
Silica cement, net ton, bulk, Ensley, Ala.	17.60
Silica cement, net ton, bulk, Chicago District	17.60
Silica cement, net ton, bulk, Utah and Calif.	24.70

Chrome Brick *Per Net Ton*

Standard chemically bonded, Balt., Chester	$82.00

Magnesite Brick

Standard, Baltimore	$104.00
Chemically bonded, Baltimore	93.00

Grain Magnesite *St. ⅜-in. grains*

Domestic, f.o.b. Baltimore, in bulk fines removed	$62.70
Domestic, f.o.b. Chewelah, Wash., in bulk	36.30
in sacks	41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢	$13.00

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.50 to $15.00
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$17.50 to $18.00
Foundry, oven coke	
Buffalo, del'd	$26.69
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

LAKE SUPERIOR ORES

(51.50% *Fe; natural content, delivered lower lake ports*) *Per gross ton*

Old range, bessemer	$8.70
Old range, nonbessemer	8.55
Mesabi, bessemer	8.45
Mesabi, nonbessemer	8.30
High phosphorus	8.30

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

C-R SPRING STEEL

F.o.b. Mill Cents Per Lb.	CARBON CONTENT				
	0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn.-58	5.35	6.80	7.40	9.35	11.65
Carnegie, Pa.-41	.....	6.80	7.40	9.35	11.65
Cleveland-2	4.65	6.45	7.40	9.35	11.65
Detroit-68	5.80	6.65	7.25	.....	.....
New Castle, Pa.-40	5.35	6.80	7.40	9.35	.....
New Haven, Conn.-68	5.85	6.75	7.35	.....	.....
Sharon, Pa.-13	5.35	6.80	7.40	9.35	11.65
Weirton, W. Va.-9	5.35	6.80	7.40	9.35	11.65
Worcester, Mass.-2	4.95	6.75	7.70	9.65	11.65
Youngstown-48	.....	6.80	7.40	9.35	11.65

UNIVERSITY OF MICHIGAN LIBRARIES

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	15	28½
9/16 in. & ⅝ in. x 6 in. & shorter	18½	30½
¾ in. & larger x 6 in. & shorter	17½	29½
All diam. longer than 6 in.	14	27½
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	31	33
Plow bolts	34	....

Nuts, Hot Pressed, Cold Punched—Sq

	Pct Off List Less Keg (Reg.)	K.	Less Keg (Hvy.)	K.
½ in. & smaller.	15	28½	15	28½
9/16. in. & ⅝ in..	12	25	6½	21
¾ in. to 1½ in. inclusive	9	23	1	16½
1⅝ in. & larger.	7½	22	1	16½

Nuts, Hot Pressed—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in..	16½	29½	6½	21
¾ in. to 1½ in. inclusive	12	25	2	17½
1⅝ in. & larger.	8½	23	2	17½

Nuts, Cold Punched—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in..	23	35	17½	30½
¾ in. to 1½ in. inclusive	19½	31½	12	25
1⅝ in. & larger.	12	25	6½	21

Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
½ in. & smaller.	35	45	28½	39½
9/16 in. & ⅝ in..	29½	40½	22	34
¾ in. to 1½ in. inclusive	24	36	15	28½
1⅝ in. & larger.	13	26	8½	23
	Light			
7/16 in. & smaller	35	45		
½ in. thru ⅝ in.	28½	39½		
¾ in. to 1½ in. inclusive	26	37		

Stove Bolts

	Pct Off List
Packaged, steel, plain finished	48—10
Packaged, plated finish	31—10
Bulk, plain finish**	62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

	Base per 100 lb.
½ in. & larger	$7.85
	Pct Off List
7/16 in. & smaller	36

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.

Cap and Set Screws

(In bulk)	Pct Off List
Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	54
⅝ in. thru 1 in. up to & including 6 in.	48
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat	46
⅝ in. thru 1 in. up to & including 6 in.	41
Milled studs	35
Flat head cap screws, listed sizes	16
Fillister head cap, listed sizes	34
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. & shorter	53

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

ELECTRODES

Cents per lb., f.o.b. plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2½	24, 30	23.15
2	24, 30	25.36
	CARBON	
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. (21)	*29.5	
Washgtn, Pa. (39)	*29.5	
Claymont, Del. (29)	*28.00	
Conshohocken, Pa. (26)		*27.50
New Castle, Ind. (55)	*26.50	*25.50
Nickel-carbon		
10 pct Coatesville (21)	32.5	
Inconel-carbon		
10 pct Coatesville (21)	40.5	
Monel-carbon		
10 pct Coatesville (21)	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. (60)		77.00
Aluminized steel sheets, hot dip, Butler, Pa. (7)		7.75

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	81.0¢
6	4	2	6	—	96.5¢

High-carbon chromium	63.5¢
Oil hardened manganese	35¢
Special carbon	32.5¢
Extra carbon	27¢
Regular carbon	23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags ...	7.4¢ to 9.0¢
Canadian sponge iron, del'd In East	10.00¢
Domestic sponge iron, 98+% Fe, carload lots	15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe	42.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	53.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	83.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	30.00¢ to 33.25¢
Copper, electrolytic	10.75¢ plus metal value
Copper, reduced	...10.00¢ plus metal value
Cadmium, 100-199 lb	..95¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd	$3.50
Lead	.....7.5¢ to 12.0¢ plus metal value
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	88.0¢
Nickel, annealed	95.0¢
Nickel, spherical, unannealed	92.0¢
Silicon	38.5¢
Solder powder	..7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	$3.00¢
Stainless steel, 316	$1.10
Tin	.....14.00¢ plus metal value
Tungsten, 99% (65 mesh)	.. $6.00
Zinc, 10 ton lots	23.0¢ to 30.5¢

ELECTRICAL SHEETS

22 Ga. H-R cut lengths

F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech-Bottom-15	.....	7.25	8.50	9.30	9.85	10.40	11.10
Brackenridge-28	.....	7.25	8.50	9.30	9.85	.....	.....
Follansbee-63	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Granity City-22	.....	7.95	9.20	.....	.....	.....	.....
Ind. Harbor-3	6.75	7.25	.....	.....	.....	.....	.....
Mansfield-75	7.25	7.75	9.00	9.80	.....	.....	.....
Niles, O.-64	7.05	7.55	.....	.....	.....	.....	.....
Vandergrift-1	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren, O.-4	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville-7	6.75	7.25	8.50	9.30	9.85	10.40	11.10

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C ... 30.50	0.20% C ... 31.50
0.10% C ... 30.00	0.50% C ... 29.50
0.15% C ... 29.75	1.00% C ... 29.00
2.00% C	28.75
65-69% Cr, 4-9% C	22.00
62-66% Cr, 4-6% C, 6-9% Si.	21.00

Foundry Ferrochrome

Contract prices, cents per lb of alloy. Noncontract prices add 2.50¢ per lb.

High carbon 8 Mesh and down.

62 to 66% Cr, 5 to 7% C, 7 to 10% Si.

Carloads, bulk	23.50
Carloads, packed	24.10
Ton lots, packed	27.25

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.10% max. C.	$1.10
0.50% max. C.	1.05
9 to 11% C.	1.00

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	19.00
Ton lots	22.50
Less ton lots	23.00

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	9.00
Ton lots	11.50
Less ton lots	13.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Fe, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.00

FERROALLOYS

Ferromanganese

78-82% Mn. maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont., Ashtabula, O.	$185
F.o.b. Johnstown, Pa.	$187
F.o.b. Sheridan, Pa.	$185
F.o.b. Etna, Clairton, Pa.	$188

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.95
Ton lots	12.55

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$74.00	$75.00
Pgh. or Chicago	75.00	76.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn. 0.2% max. C. 1% max. Si, 2.5% max. Fe.

Carload, packed	34.75
Ton lots	36.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn ..... 19.15¢

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	9.90
Ton lots	11.55
Briquet, contract basis carlots, bulk delivered, per lb of briquet	11.15
Ton lots	12.75

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $90.00. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

97% Si, 2% Fe	21.70
97% Si, 1% Fe	22.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carload, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

90% Si	20.00	75% Si	14.30
85% Si	12.40	85% Si	15.55
90-95% Si			17.50

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd, Mn 85-90%.

	Carloads	Ton	Less
0.2% max. C, 0.06% P, 90% Mn	26.25	28.10	29.30
0.5% max. C	25.75	27.60	28.80
0.75% max. C	25.25	27.10	28.30
1.00% max. C	24.75	26.60	27.80
1.25% max. C, 7.00% max. Si	24.25	26.10	27.30
	21.25	23.10	24.30

For other ferroalloys see May 24 issue, p. 160.

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MOLY

Other Ferroalloys

Alsifer, 20%, Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.
Carload ..... 9.90¢
Ton lots ..... 11.30¢

Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo. $1.15

Ferrocolumbium, 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb.
Ton lots $4.90
Less ton lots 4.95

Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $3.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo. $1.32

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
10 tons to less carload 75.00

Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa. freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $177.00

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered $5.00

Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.
Openhearth ..... $3.00-$3.10
Crucible 3.10- 3.20
High speed steel (Primos) 3.20- 3.25

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.18

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
Carload, bulk lump ..... 14.50¢
Ton lots, bulk lump ..... 15.75¢
Less ton lots, lump ..... 16.25¢

Vanadium pentoxide, 86 to 89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.28

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk ..... 7.00¢

Boron Agents

Contract prices per lb of alloy, del.

Borosil, f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B $5.25

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Carbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots, per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots $1.20
F.o.b. Wash., Pa.; 100 lb up .85
10 to 14% B 1.20
14 to 19% B 1.50
19% min. B 1.50

Grainal, f.o.b Bridgeville, Pa., freight allowed, 100 lb and over.
No. 1 ..... $1.00
No. 6 ..... 68¢
No. 79 ..... 50¢

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd
Ton lots $1.46
Less ton lots 1.57

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.
Less ton lots $1.80

Silcaz, contract basis, delivered.
Ton lots ..... 45.00¢

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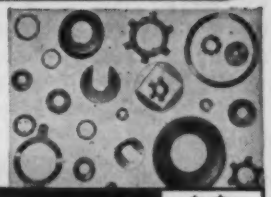

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NEWS OF USED, REBUILT AND SURPLUS MACHINER

Business Decline — Used machinery activity in the Detroit area has fallen off in recent weeks to a level substantially below that of earlier months this year. The trade reports that the slump may have been caused by scarcity of modern equipment, uncertainty about price controls and the still slow pace of subcontracting.

Except for a few dealers directly involved in electrical supplies, there has been no business here directly associated with flood ruin in the Kansas-Missouri section.

First Served — Many Detroit buyers are known to be canvassing government warehouses of reserve machine tools. They are trying to hunt up tools to produce products for defense. Some have reported fair success but it is believed that the cream of the crop has pretty well been taken by first-comers.

The inadequacy and inaccuracy of available descriptions of equipment have created many unanticipated problems for local tool engineers.

Detroit dealers say they are walking strictly in the dark when it comes to pricing. The government pricing picture is confused and official government instructions seem to be lacking. Pricing is being held at a level at which it is believed will become the government's control price.

Outlandish Prices—Such price levels do not apply at local auction sales. Thus the ability of dealers to get equipment in the free market has been limited. In other areas, too, buyers bypass dealers to buy up tools and equipment at outlandish prices.

This cold shoulder at auctions has cut off an important source of tools. It hits at income and shrinks supplies of recent equipment in dealers' warehouses. The Detroit trade admits that it is next to impossible to buy within its area machines built later than 1940.

Figuring It Out—Used machi ery dealers may be puzzled by t slow acceleration of defense p duction. This has contributed the lethargy of the summer m ket. They were hopeful at fi that a quick spread of subco tracting would force manufact ers into the used market and t some of the not-so-new stuff co be moved.

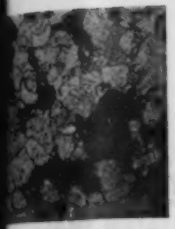
But defense production can be turned on that quickly. Form lation of defense mobilization p duction was not done speedily. T Military was uncertain of wha wanted. Secondly, the tooling stage is dragging a little.

New Facilities — Tooling up the preliminary to production. many major industries civili product lines are not easily c verted to defense. This enta building of new plants and n facilities before the prime c tractors are able to start the p duction that means subcontra for their normal suppliers others.

Another trend has been m tioned. Prime contractors make sure that all their facili are the first to be working time on defense work. After t happens and an overload poin reached the subcontracting spr is swift.

Wait Till '52—No lightning pickup in subcontracting is ant pated in the near months. I expected that the vast sums government has committed to fense output will spark a he subcontracting volume in 1 Until that time most small ma facturers will still be shaky how much, and what kind civilian work they will be do They may not be too eager used machines on this basis, though stung by shortages, are likely to hold on to the chine tools they have on chance that they might be ne later. However, used busi should pick up this fall and wi

low to select grain structures for better machinability of alloy steels



Blocky Ferrite, Low C

Spheroidized, Med. C

Lamellar, Med. C

The combination of grain structure, ductility and hardness has, in general, much to do with the degree of machinability of an alloy steel.

For purposes of comparing different types of machinability, all alloy steels may be grouped in three carbon ranges: low carbon, .08 to .30 pct; medium carbon, .30 to .50 pct; and high carbon of .50 to .80 pct.

Each of these ranges must be considered separately, as each has a pronounced effect on the corresponding grain structure and machining properties. Certain grain structures may be well suited for one type of machining and at the same time wholly unsuited for others. For example, in a medium carbon range, an alloy steel with a spheroidized structure may be good for turning operations, poor for forming, fair for drilling, and poor for broaching. This, of course, means that a compromise must usually be accepted to get the most economical overall machinability in any one grade of steel.

The table shown here is a suggested guide. It contains various combinations of carbon range, heat-treating process and structure believed to be most suitable for each type of machining.

Our metallurgists will gladly furnish further information on the relative machinability of various alloy grades. Call or write for this information.

Bethlehem is a dependable source for all of the AISI alloy steels as well as the full range of carbon grades and special steels.

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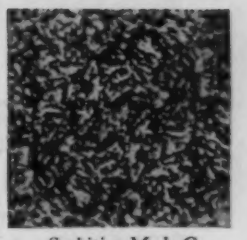
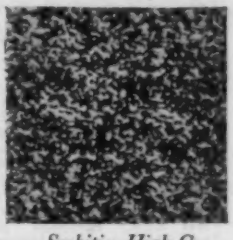


Sorbitic, Med. C

Spheroidized, High C

Lamellar, High C



Sorbitic, High C

CARBON RANGE	PROCESS	STRUCTURE	TURNING	FORMING	DRILLING	BROACHING
LOW (C .08 to .30)	Normalize or Anneal	Blocky Ferrite	Good	Good	Good	Good
MEDIUM (C .30 to .50)	Anneal	Spheroidized	Good	Poor	Fair	Poor
MEDIUM (C .30 to .50)	Anneal	Lamellar	Fair	Good	Good	Good
MEDIUM (C .30 to .50)	Heat Treat	Sorbitic	Fair	Fair	Fair	Fair
HIGH (C .50 to .80)	Anneal	Spheroidized	Good	Good	Good	Fair
HIGH (C .50 to .80)	Anneal	Lamellar	Fair	Poor	Poor	Poor
HIGH (C .50 to .80)	Heat Treat	Sorbitic	Good	Fair	Good	Good

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